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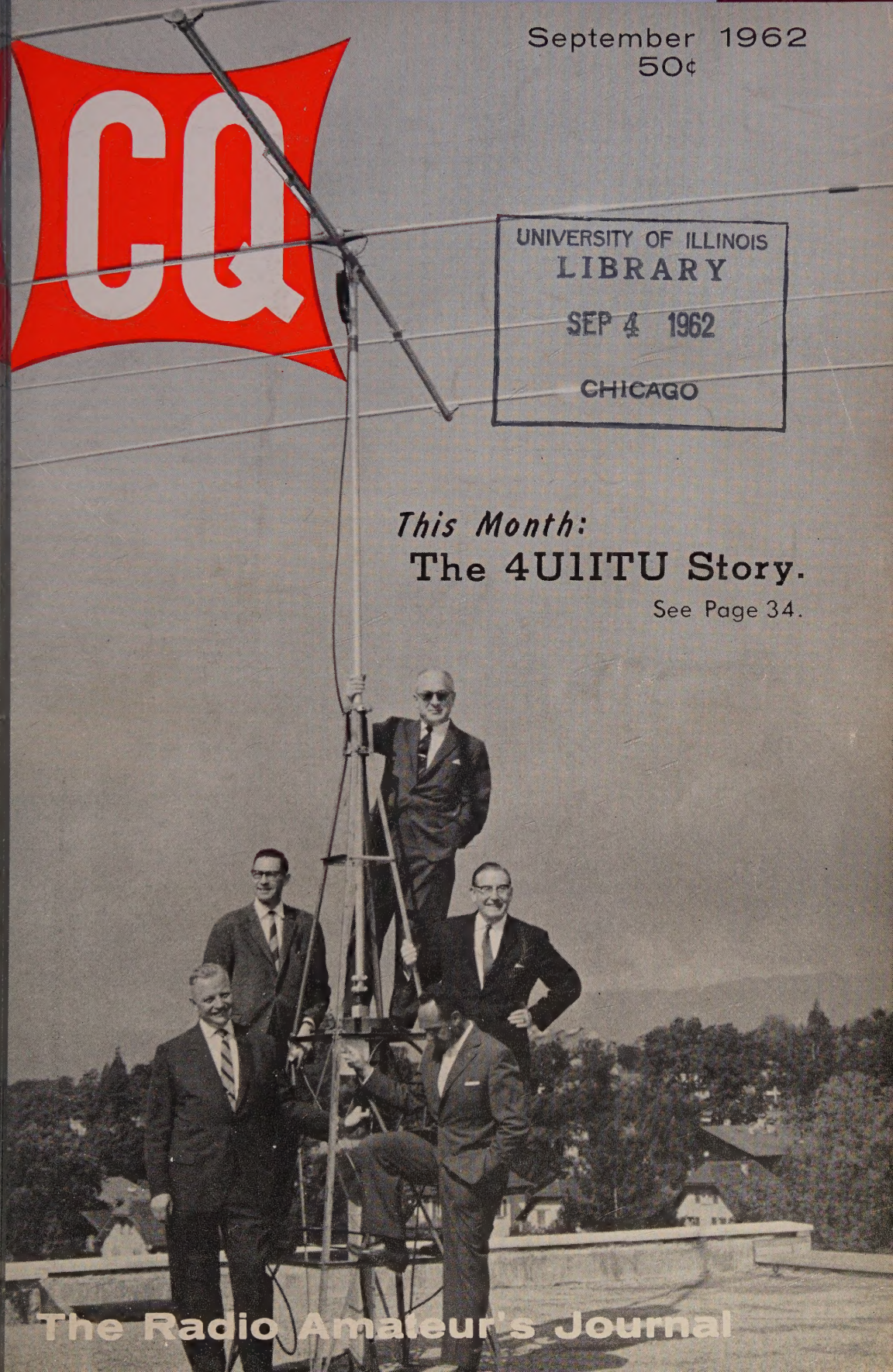
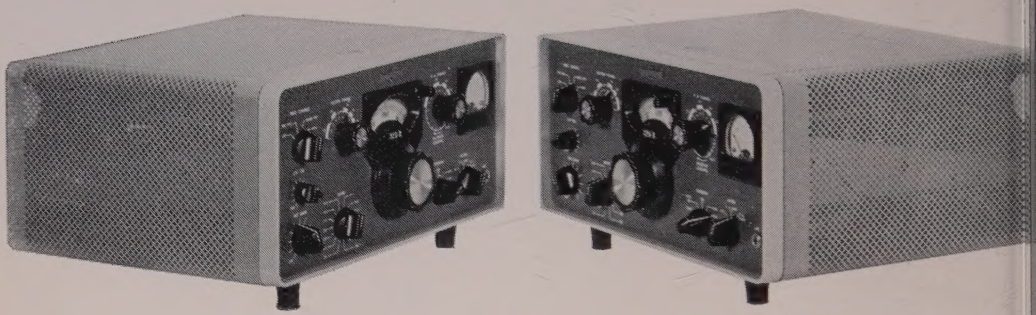
This Month:

The 4U1ITU Story.

See Page 34.



The Radio Amateur's Journal



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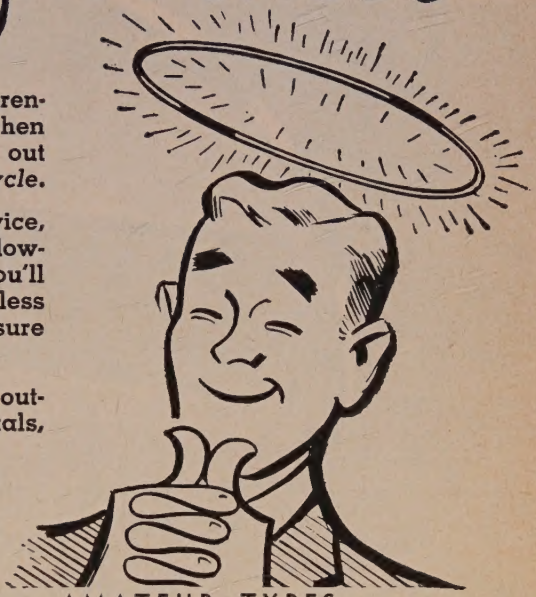

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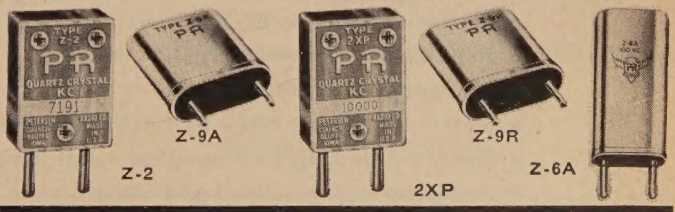

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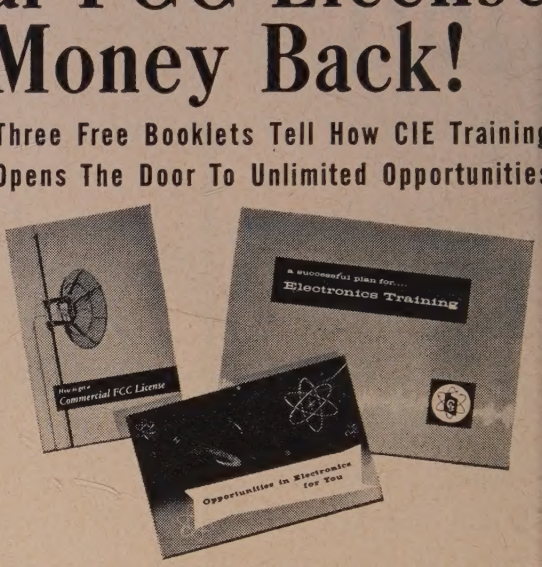

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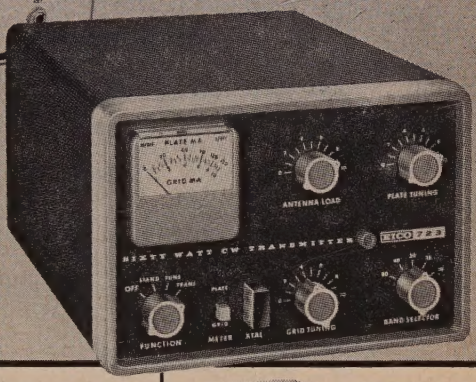

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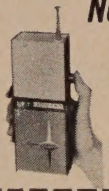

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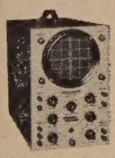

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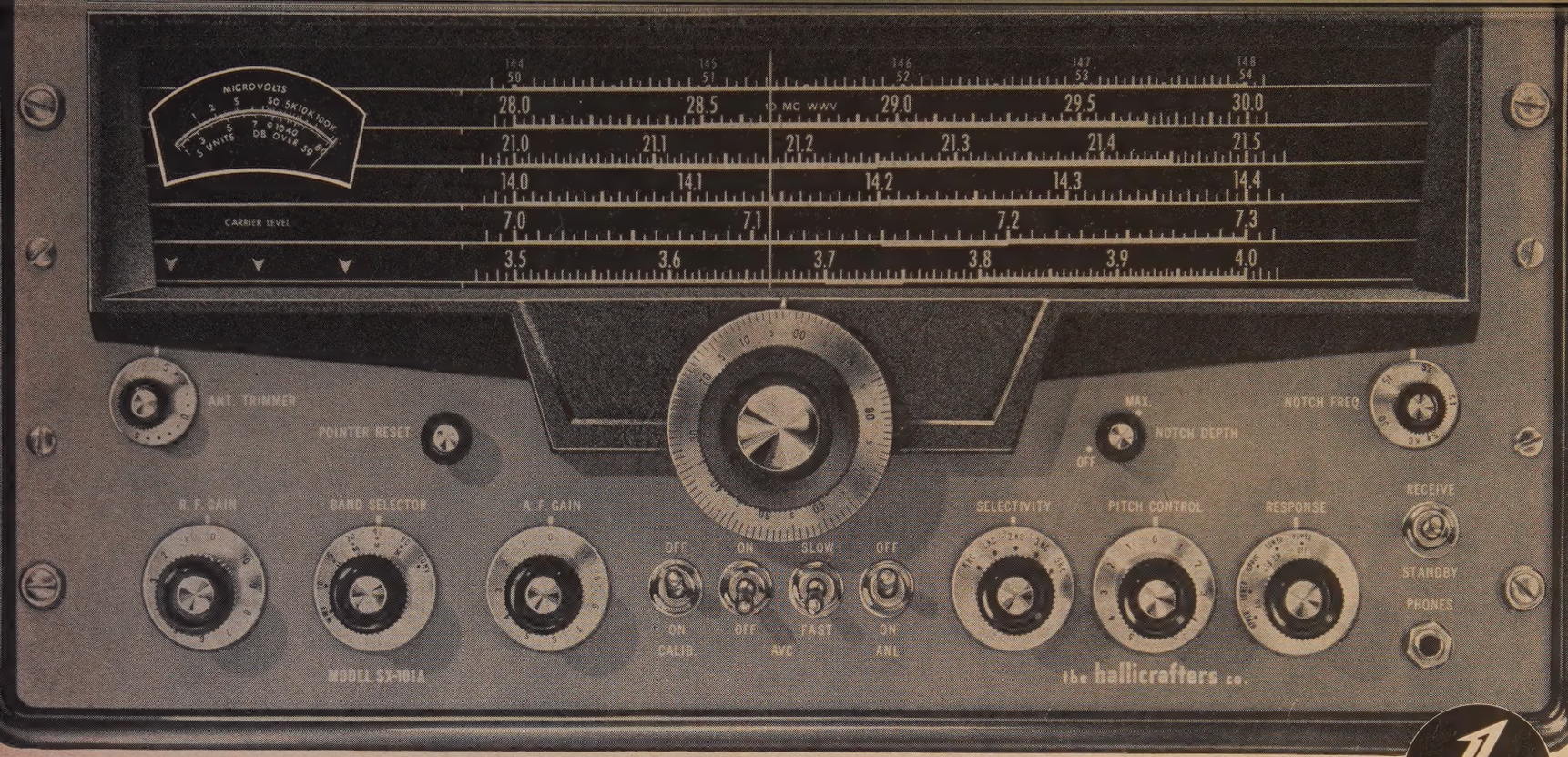

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ZERO BIAS

THE natives are restless! This is the only adequate phrase we can think of to explain the recent *faux pas* presented to the amateur DXing fraternity by the DX Committee of the American Radio Relay League.

Normally, this space is devoted to criticizing, or praising, actions taken by the Board of Directors of the ARRL. Bulletin #604, however, announced by the DX Committee, has a rather undemocratic foundation and it is not likely your Director knew of its institution. It was obviously made in quick retaliation against what the DX Committee anticipated to be a gigantic turn of events on the low end of twenty, due to WØMLY's recent DXpedition to Africa.

As many of you already know, WØMLY recently journeyed to Africa, presenting to the amateur fraternity one of the most ambitious DXpeditions undertaken by one man. Dick's three part article, the second part of which appears this month, explains some of the interesting and difficult problems encountered in operating from the new African Republics.

Dick's trip, by the way, was cut short in Mali due to a fire which gutted the quarters in which he was staying, completely destroying the entire station and many of his personal effects.

Bulletin #604 resulted directly from the operations of WØMLY using s.s.b. below the frequency of 14,100 kc. We would like to make it clear at this time that Dick, while licensed to operate in the African Republics, at no time violated the rules and regulations of the countries in question. Phone operation *is* permitted below 14,100 kc in the countries in which Dick operated; in fact, phone operation in this frequency range is permitted in a great many countries, both in the European and African area. The reason you haven't heard phone operation in this portion of the band is due to a "Gentleman's Agreement" which has kept the first 100 kc exclusively open for c.w. operation.

Barring all the disagreeable things we hear about DXpeditions, we think the sole purpose of such a venture is usually to provide the gang with the greatest number of opportunities to work the rare station. When operations of this kind are carried out by one individual, as in this case, the chances are that sleeping and eating will undoubtedly cut into on-the-air activity. Despite Dick's handicap of being on his own, obtaining visas, renting lodging and transportation, keeping an eye on the equipment and doing hundreds of other jobs that ordinarily would take the average tourist all of his available time, he managed to work thousands of stations at each stop; certainly a commendable job.

In the process of handing out those elusive new countries, we think it only right that the operator cut a few corners to work as many stations as possible, keeping in mind that legal operations must be constantly maintained.

Bulletin #604, since it "requests" amateurs not to work phone below 14,100 kc is flatly directed at foreign amateurs and not to operators licensed by the Federal Communications Commission. What then, are the DX Committee's motives? We think that perhaps they panicked, thinking that one operator using phone below 14,100 kc would be followed by others. We think they should have waited and evaluated the situation a little more carefully before instituting a directive of this kind.

Now don't misunderstand us, DXCC is the League's award. They can do with it what they want! But! and this is a big but . . . the DX Committee is, or should be, out to please the majority of DXing amateurs. From the grumblings we've heard, we're not sure the majority is entirely pleased.

The DX Century Club Award certainly *is* a splendid achievement for which amateurs the world over work hard to obtain. We feel that the ARRL DX Committee doesn't realize that DXpeditions of this type, as well as others in the past, and those to come, are designed to *promote* DXCC. WØMLY certainly didn't fly to Africa with tons of equipment to help out the WAZ boys or give out BERTA credit.

CQ feels it was in bad taste for the League to foist upon foreign amateurs a directive that would certainly cause major repercussions. It is suggested that a little more finesse could have been used in sponsoring a directive of this kind, if it had to be done at all.

It is incredible indeed, that as a new President and Secretary of the ARRL take office, they bring upon themselves criticism from all parts of the amateur world.

OUR COVER

Seen high on the roof of the new ITU building in Geneva, Switzerland are some of the amateurs responsible for installing the 4-element beam and other equipment used by 4U1ITU. From left to right, up the pyramid, are: HB9UD, HB9ET, M. Leveque (an s.w.l.), PAØBB/HB9SI, and at the apex is W2YEJ. See page 34 for the complete story.

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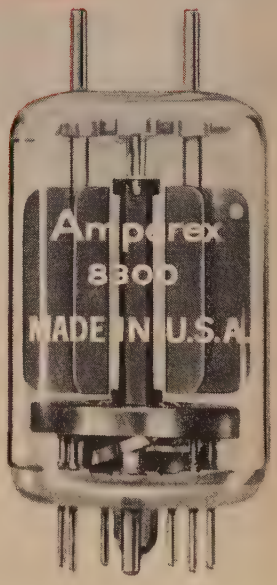
Harp cathode in new Amperex SSB twin tetrode permits full talk-power in 100 milliseconds!



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Average D. C. Plate Current*	131	130 ma
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Average Plate Power Output*	70.5	56 watts
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Ask Amperex

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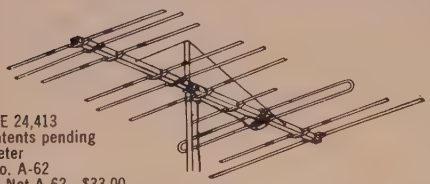

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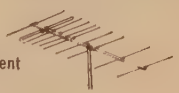

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Transistorized Transceivers

Editor, *CQ:*

I think that you must admit the following: s.s.b. is the modern mode of transmission, and the enterprising amateur is interested in s.s.b. Second, transistors are not only a natural for s.s.b. since the basic operations as audio, carrier suppression, s.b. suppression and heterodyning can be performed at low level using transistors most efficiently, but also transistors are one of the great achievements of this electronic era. The amateur has always been a pioneer, and led the way in new developments. Then, in the name of heaven, can you please tell me why I have been hopefully searching through the pages of *CQ* studiously each month for the last several years, and have never come across a transistorized s.s.b. exiter, preferably all band, but at least for 15 and 20 meters? Instead, I see the same old tube exciters and same old linears year after year, that I have grown sick of seeing.

Will you please, please publish some transistor s.s.b. exciter circuits, tunnel diode circuits, and thus elevate the ham back up to his traditional level of experimenter in the forefront of development?

Gerald Lorentz, W6BPI.
Helen Lorentz, WA6AMF
1850 West Willow Street
Stockton 3, California

Well, what say fellows?—*ed.*

The USA-CA Award

Editor, *CQ:*

I have just finished reading the June issue of *CQ* and have a suggestion that I think might help reader Ken Stewart, W8CLD in his pursuit of the County Award. The Government Prining office in Washingon, D.C. has put out a map of the U.S. including Alaska and Hawaii. It is a very good map with each state divided up into its respective counties. Every county in the U.S. is on this map. The map is printed by the Dept. of Commerce. As for the cost of the map, I have no idea.

One thing that I really liked about the last issue that I read was the new Propagation Chart that was published. It really comes in handy in this part of the world. So with this I will pass along my best 73 and keep up the good work.

S/Sgt Roy A. Arild, WA6VRK/AJ5UU/5A3TA
AF 10611012
1950th COM SQ, SITE 4
APO 231, N.Y. N.Y.

What Is Wrong With a Hertz?

Editor, *CQ:*

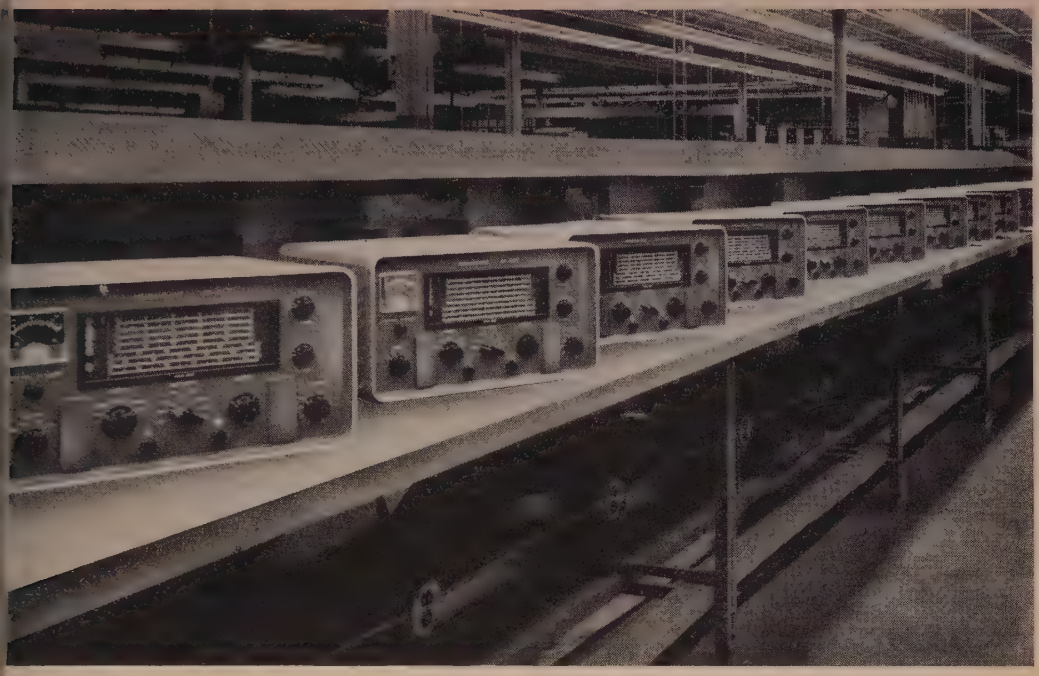
I noted in the May, 1962 issue of *CQ*, as perhaps several thousand others have, on page 36 "What's Wrong With A Hertz?" fig. 1; nothing wrong with the Hertz except the overall length which should be 64 feet instead of 32 feet.

Some novices might try this lash up without checking dimensions and condemn it on the basis of on-the-air tests.

Just a friendly attempt at keeping *CQ* the good magazine it really is. I have every issue since Nov. '48.

Geo. H. Howard
884 Winter Street
Hanson, Mass.

Thanks George. In case you missed it, this error was noted in the ANNOUNCEMENTS column on page 116 of the July issue.—*ed.*



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We extend our thanks to the many that have waited patiently for delivery of their HX-50 transmitter. This "waiting time" was not wasted—it was used to bring this unit to a performance peak — to give you every feature you have ever wanted in an SSB transmitter—*at a price you can afford.* **399.50**
Amateur Net

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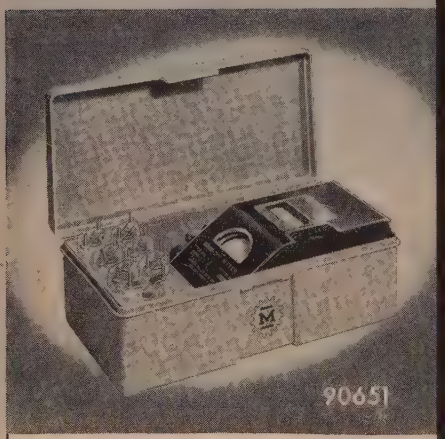

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Testing Frequencies?

Editor, *CQ*:

. . . What do you think of a couple of definitely assigned frequencies in each band for testing, tuning up and antenna work? This would eliminate the appearance of so many miscellaneous carriers ruining perfectly good QSO's. Let us assume on 14 mc for instance, 14021, 14111, 14209, 14,309 + 0.25 kc. Would this help by getting all the antenna work and tuning up tied down to specific points?

D. E. Chapman, W9DPY
670 North Elizabeth St.
Lombard, Ill.

Phone Patching

Editor, *CQ*:

It is time someone cleared the air regarding phone patching, for letters such as KZ5LC wrote in July, 1962 issue of *CQ*, and editorials such as in the May, 1962 issue of *CQ*, tend to perpetuate the guilt complex many amateurs have when making phone patches.

It should be stated emphatically at the very outset that *phone patching does not violate any Federal, State or City law*.

Since this aura of guilt *does* seem to surround the questions of phone patching, let us examine any area where the amateur may be doing wrong. It might be a particular use of the phone patch which is the troublemaker rather than the basic phone patching premise.

First of all, if a phone patch should be made to a foreign country which does not have an agreement with the United States to handle third-party traffic, this would be an FCC violation. However, since this refers not only to phone patching, but also to any method of message-handling, the amateur should be intelligent enough to stay away from this type of violation.

Secondly, it might be possible to violate FCC Rule 12.102 which prohibits remuneration for use of an amateur station by patching for business reasons. Here again, the amateur should be intelligent enough to refuse to phone patch for anyone who would attempt to use the air waves to transact business. As a matter of fact, it would be wise if an amateur accidentally became involved in phone patch business transaction to terminate the QSO immediately, tactfully explaining to both parties the meaning of FCC Rule 12.102.

The last place for trouble, and the one that seems to bother most amateurs, is the Bell System and independent company rule which prohibits direct connection to telephone company equipment.

The telephone companies must maintain control of their huge investments in equipment which they service and repair free of charge to the customer. In order to do this they must keep a rule on the books which prohibits direct connection. By doing so, if a customer does cause trouble on his circuit by some kind of haywire connections (this might be crosstalk, refusing to give up time on a party line, *etc.*,) the company then can refuse service to the offending customer. This is the only punishment which the telephone company can resort to when a violation of the direct connection rule occurs. They cannot fine the amateur, they cannot put him in jail, but they can refuse further telephone service.

Actually, what is happening throughout the United States is this: The telephone campanies (particularly Bell System) are ignoring direct connections made by amateurs for phone patching where no interference to normal usage occurs. A statement that telephone companies require the amateur to report to them when using a phone patch is ridiculous, for then you would be reporting to them that you are violating one of their rules.

The reason the telephone companies ignore amateurs is that there simply is no competition involved. Saying that the amateurs are in competition with telephone companies is like saying that throwing a few buckets of water in the ocean will make it overflow. Compared to the millions of telephone calls made daily in the United States, the few hundred amateur phone patches

◀ For further information, check number 10, on page 110

Outstanding performance on SSB, AM and CW with absolutely no compromise on any mode!

"SSB ADAPTER"—Here's the filter-type SSB generator amateur operators everywhere have been asking for! Bandswitching 80 through 10 meters . . . more than 50 db sideband suppression . . . more than 45 db carrier suppression! When used with the Viking "Valiant" or "Valiant II" it places 275 watts P.E.P. at your command—gives you the punch and penetration necessary for solid communications on today's crowded bands!

Two compact units and interconnecting cables . . . RF unit is only 8" wide—may be placed on your operating desk—power supply unit may be placed in any convenient location. Unique design features built-in multiplier requiring VFO input only—band-pass interstage couplers require no tuning—design and front panel layout make operation practically "foolproof"! Superb audio fidelity and balanced audio response; excellent sideband, spurious and carrier suppression. Other features: positive VOX and anti-trip circuits with built-in anti-trip matching transformer and adjustable VOX time delay.

Cat. No. 240-305-2—Wired and tested with remote power supply, tubes crystal filter, less microphone. **AMATEUR NET** **$369.50**

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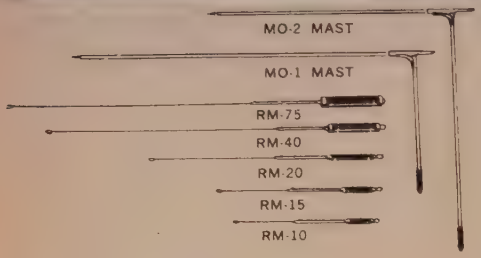
10-15-20-40-75- METERS



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Mast and resonator in mobiling position

Mast and resonator folded over

RESONATOR WILL WORK PROPERLY ONLY IF USED WITH MO-1 OR MO-2 MASTS. ANTENNA ASSEMBLY CONSISTS OF 1 MAST and 1 RESONATOR.

MODEL	DESCRIPTION	TOT. HGT. of ASSY.	NET
MO- 1	54" mast folds at 15" fr. base	Rear deck or fender	$ 7.95
MO- 2	54" mast folds at 27" fr. base	Bumper	7.95
RM-10	10 meter resonator	80" max. - 75" min.	5.95
RM-15	15 meter resonator	81" max. - 76" min.	6.95
RM-20	20 meter resonator	83" max. - 78" min.	7.95
RM-40	40 meter resonator	92" max. - 87" min.	9.95
RM-75	75 meter resonator	97" max. - 91" min.	11.95

ANY MAST OR RESONATOR MAY BE PURCHASED SEPARATELY

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Flat alloy steel strap fits any shape bumper, large or small. "J" bolts require only ¼" clearance between top of bumper and car body. Heavily chrome plated 1½" die cast Zamak ball has ⅜"-24 thread. Adjustable for true vertical position. Gray Cycolac base. Heavily cadmium plated....$6.95

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For further information, check number 12, on page 110

are infinitesimal.

Before continuing, however, it should be mentioned that there are many independent telephone companies in the United States, some of them very small. It is possible to be in a community where you might get a hard time regarding your direct connection to the phone lines. However, by using common sense in your relationship with the operators (don't act like you are working for the Edison Award on every patch), by keeping audio level down to prevent cross-talk, you should have no trouble. Do not jeopardize your service by allowing the operators to talk to the party at the other end of the radio service, make sure you have the correct party on the line and begin telephone communication before switching into the phone patch.

A realistic look at the whole problem brings up these points. The entire amateur background points to the relaying of messages. Yet, to be strictly technical, this is in competition with Western Union. However, as with the telephone company, the amount is insignificant. Western Union ignores us, just as the telephone companies and AT&T ignore us.

Technically, the FCC itself is allowing competition with phone companies and AT&T by encouraging Citizens' Band licenses for business purposes.

AT&T, being very realistic about communication, is even encouraging methods which at first glance would seem to cost them money. Their new "data-phone," for example, will allow the customer to send coded data at high speed, data which if used in normal voice communication might take hours.

Incidentally, it should also be mentioned that most of the justification for complaints against phone patching is that it involves, "Uncle Joe talking to Cousin Martha." This is, however, exactly the type of patch which follows the accepted version of third party message permitted by amateurs . . . "messages by third parties of such a character that would not normally be sent by any existing means of electrical communications."

This writer does not condone the "head-in-the-sand" attitude of the ARRL in ignoring phone patching, for as far back as March, 1957, I have been writing the ARRL on this subject.

To summarize regarding phone patching by radio amateur:

Since no Federal or State law is violated by phone patching, and since Telephone Companies in the United States generally ignore violation of their own rule regarding direct connection where no interference is caused to normal telephone service, then let radio amateurs police themselves by the use of ordinary common sense and phone patch whenever they wish without feeling "guilty."

Kermit A. Slobb, W9YMZ
1605 Oakwood Road
Northbrook, Illinois

Inverted V

Editor, *CQ*:

This is my first letter to an editor, but was prompted by a statement in the article "An 80 & 40 Meter Inverted V" by C. W. Zawacki, (March '62). He says, "A check for the lowest s.w.r. reading will indicate the resonant frequency." I have heard this and seen it in print many times but isn't necessarily correct. The only time this is true is when the feed impedance matches the antenna impedance or if the feedline is a half wave or multiple thereof. It is possible to have an antenna cut for 3.9 mc and have a 1:1 s.w.r. at some far removed frequency such as 3 mc. This point is where the system looks like a pure resistance. This can be proven with a grid dip meter or with a field strength meter. Even with high s.w.r. the antenna will radiate better near its resonate frequency.

Sure enjoy *CQ* and thanks for a fine ZERO BIAS. Sure is good to find *CQ* behind ARRL instead of fighting them.

Clayton W. Dewey, K8CKD
311½ N. James Street
Ludington, Michigan

INTERNATIONAL **AMATEUR CRYSTALS**

Amateurs throughout the world depend on International crystals for precision frequency control.

Manufactured by the same highly skilled craftsmen who produce International commercial crystals for the broadcast industry, two-way radio communication, and our space and missile program.

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1000 kc to 137 mc — .01% tolerance

Wire mounted, plated and hermetically sealed in metal holders. FA-5 and FA-9 are HC/6U pin type. The FM-9 is an HC/18U pin type.

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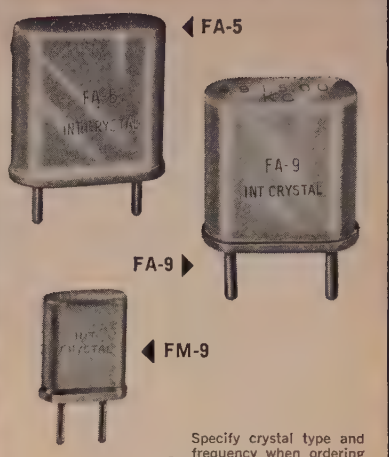

Specify crystal type and frequency when ordering.

	FA-5 and FA-9	FM-9
Fundamental	* 1000 - 1499 kc	Not available
	* 1500 - 1799 kc	Not available
	* 1800 - 1999 kc	Not available
	2000 - 9999 kc	8000 - 9999.999 kc
	10000 - 14999 kc	10000 - 15000 kc
	15000 - 20000 kc	15001 - 19999.999 kc
Overtone (3rd)	10 - 14.99 mc	Not available
	15 - 29.99 mc	20 - 39.99 mc
	30 - 59.99 mc	40 - 59.99 mc
Overtone (5th)	60 - 75.99 mc	60 - 89.99 mc
	76 - 99.99 mc	90 - 100 mc
	Not available	101 - 109.99 mc
Overtone (7th)	100 - 137 mc	110 - 137 mc

* Allow three to four day processing.

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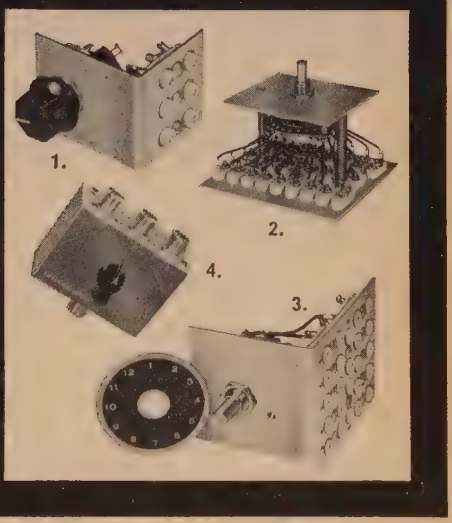
Priced from $2.75 to $19.50



1. S-121 Triple Socket Crystal Switch. Cat. No. 150-126.
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4. 3-Position Coaxial Switch. Cat. No. 100-112.

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For further information, check number 13, on page 110

USA-CA

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ANNOUNCING

Ham-Engineer Wanted

"The National Bureau of Standards, Central Radio Propagation Laboratory located at Boulder, Colorado is urgently looking for Electronic Engineers (or Amateurs with qualifying engineering experience) for a one-year tour of duty, starting this November, as Radio Propagation Station Engineers at either Byrd or South Pole Stations in the Antarctic. Appointees will receive two months of training at Boulder, Colorado. Here is your opportunity to get in some amateur operation from KC4 land. The amateur equipment is there ready to operate. If interested, send a brief resume immediately to H. G. Sellery, WØTQF, National Bureau of Standards, Boulder, Colorado.

Peoria, Ill.

The Peoria Area Amateur Radio Club Hamfest will be held on September 16 at Exposition Gardens, on the northwest edge of Peoria. Follow route 88 north to Northmore Road at State Police Hamfest signs. Plenty of space for free swap section and parking. Food available on the grounds. Free coffee and doughnuts 0930 to 1000 CDT. Advanced registration (until Sept. 9) $1.00. Registration at the gate $1.50. For tickets and information write: Stan Kujawa, K9JSB, 1612 West Columbia Terrace, Peoria, Illinois.

Uniontown, Pa.

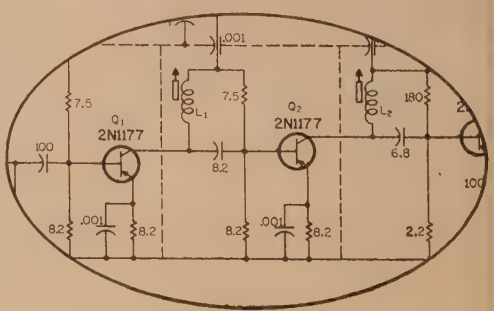
The Uniontown Amateur Radio Club will hold its 13th Annual Gabfest on Saturday afternoon and evening, September 15. It will be held on the club grounds on the Old Pittsburgh Road just off Route 51, 2 miles north of Uniontown, Pa. For further information contact Joseph M. Sofranko, 438 Braddock Ave., Uniontown, Pa.

Syracuse, N. Y.

The Syracuse VHF Club will hold its 8th Annual Roundup at Three Rivers Inn on October 6, 1962. There will be presentations by outstanding v.h.f. speakers, many awards and prizes, a good dinner and a floor show featuring nationally known talent. Tickets are $5.50 for early registrations and $6.00 at the door. More information and reservations may be secured from Joseph Bancheri, WA2ADG. Sec., 215 Westfall Drive, Syracuse 9, N. Y.

Corrections

On page 59 of the July issue (2N1177's In A 6 Meter Converter) a poor print job resulted in several decimal points disappearing from the fig. 1 schematic diagram. In addition, the coil values for the bandpass filter on page 60 were erroneously omitted. Below is a corrected portion of fig. 1 as well as the fig. 3 coil values.
L_1, L_2, L_3,—1.5μh, 20t #18 5/16" dia. 1¼" long
L_4—0.5μh.



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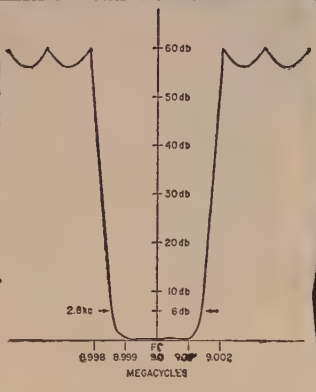
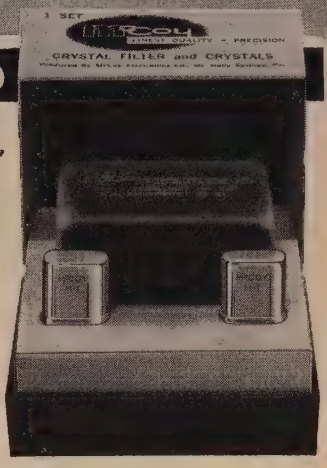
McCoy SINGLE SIDE BAND FILTERS

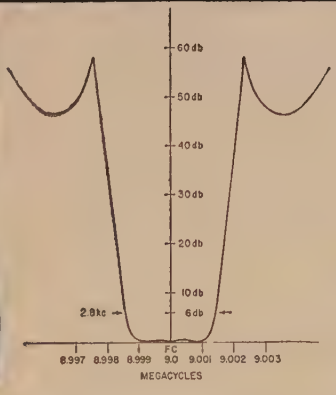
The GOLDEN GUARDIAN (48B1)

TECHNICAL DATA
Impedance: 640 Ohms in and out (unbalanced to ground)
Unwanted Side Band Rejection: Greater than 55db
Passband Ripple: ± .5db
Shape factor: 6 to 20db 1.15 to 1
Shape factor: 6 to 50db 1.44 to 1
Package Size: 2 7/16" x 1 19/32" x 1"
Price: $42.95 Each





The SILVER SENTINEL (32B1)



TECHNICAL DATA
Impedance: 560 Ohms in and out
Unwanted Side Band Rejection: Greater than 40db
Passband Ripple: ± .5db
Shape factor: 6 to 20db 1.21 to 1
Shape factor: 6 to 50db 1.56 to 1
Package Size: 1¾" x 1¼" x 1"
Price: $32.95 Each

Both the Golden Guardian and the Silver Sentinel contain a precision McCoy filter and two of the famous M-1 McCoy Oscillator crystals. By switching crystals either upper or lower side band operation may be selected. Balanced modulator circuit will be supplied upon request.

Both sets are available through leading distributors. To obtain the name of the distributor nearest you or for additional specific information, write:

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For further information, check number 15, on page 110

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☐ Send free descriptive brochure.

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For further information, check number 16, on page 110

Conelrad

Effective July 13, 1962, Sections 12.190 through 12.196 of the FCC rules applying to amateurs are deleted. These sections describe the need for and the mechanics of Conelrad. Henceforth, the Conelrad provisions need not be observed by amateurs.

Petition Denied

The petition RM-341, filed by Maxwell Meyers, W2BIB, asking for an extension of the twenty meter amateur phone band from its present allocation of 14,200-14,350 kc to 14,150-14,350 kc has been denied. The Commissions decision is printed below.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D.C.

In the Matter of

Amendment of Part 12 of the Commission's Rules governing the Amateur Radio Service to extend the sub-allocation for A-3 emission in the 14 mc amateur band. } RM-341

MEMORANDUM OPINION AND ORDER

By the Commission:

1. The Commission has before it for consideration a petition for the institution of rule making filed by Maxwell Meyers, Chauncey, New York.

2. Petitioner asks that the A-3 sub-allocation in the 14 mc amateur band be extended from the present 14,200-14,350 kc to 14,150-14,350 kc.

3. On February 18, 1959, the Commission issued a Notice of Proposed Rule Making, Docket 12780, proposing an additional 50 kc for radiotelephone amateur operation to the then 14 Mc/s band. The specific sub-band involved in this proceeding was between 14,300-14,350 kc.

4. Many comments were received both favoring and opposing the proposal. The opponents stressed the point that foreign amateurs would be forced to move to the lower portion of the band; this, in turn, would create more interference to the United States radiotelegraph amateurs and, quite possibly, reduce the ability of United States radiotelephone amateurs to communicate with foreign amateurs. The point also was raised by the opponents that many of the personnel of foreign-based U. S. military bases rely on amateur radio for personal communication.

5. The proponents pointed out, among other things, that the increase in radiotelephone usage had resulted in undue congestion in the radiotelephone sub-allocation in the 14 mc band.

6. After weighing these comments, the commission on January 27, 1960, extended the A-3 (radiotelephony) sub-allocation in the 14 mc band from 14,200-14,300 kc to 14,200-14,350 kc. It was recognized that foreign amateurs who operated almost exclusively in the 14,-300-14,350 sub-band would surely be driven to the low end of the band; *i.e.*, between 14,000-14,200 kc. While this would add to the interference to United States amateurs operating with A-1 (radiotelegraphy) emission in this lower portion of the band, the Commission determined that the increase in A-3 operation in the 14 mc band warranted an additional 50 kc for such operation.

7. The instant petition would crowd even further those employing A-1 emission in this band, resulting in additional interference. Communication needs of radiotelegraphy operators and of those located in foreign countries have not diminished in the past two years. Expansion of the radiotelephone sub-allocation in this band at the expense of these groups does not appear to be in the public interest at this time.

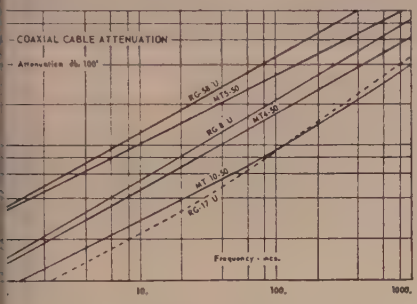
8. Accordingly, IT IS ORDERED, This 25th day of July, 1962, That the petition filed by Maxwell Meyers to further extend the frequency space for 14 mc A-3 operation, be DENIED.

FEDERAL COMMUNICATIONS COMMISSION

BEN F. WAPLE
Acting Secretary

Power Lost in Coax is Gone Forever!

ee article by Michael Ferber in April, 1959, Q.S.T.



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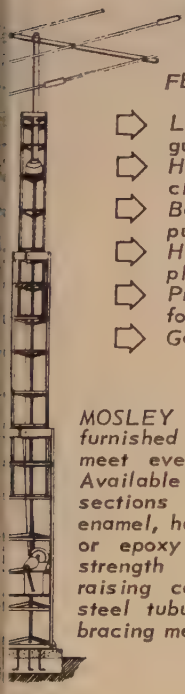

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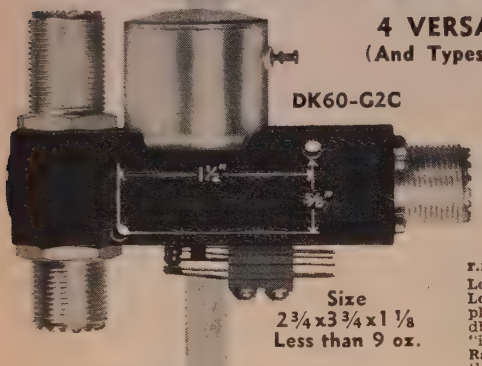

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STANDARD RELAYS WITH TYPE UHF CONNECTORS INCLUDE:

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- DK60-2C—SPDT r.f. switch with DPDT auxiliary contacts.
- DK60-G2C—SPDT r.f. switch with DPDT auxiliary contacts and special "isolation" connector in de-energized position.

DK60 SERIES from $12.45

r.f. SPECIFICATIONS:

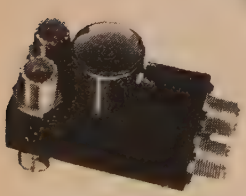
Low VSWR: less than 1.15:1 from 0 to 500 mc. **Low Losses:** Pure silver contacts. Parts in crucial positions plated with fine silver. **Low Cross-Talk:** (greater than 80 db) in DK60-G and DK60-G2C through use of patented "isolated connector" (in energized position). **High Power Rating:** (a) 1 kw through straight connectors (b) to 10w through "isolated connector" — excellent for video switching. **SPDT r.f. Contacts:** r.f. leakage extremely low, below typical r.f. connectors.

MECHANICAL SPECIFICATIONS:

High Contact Pressures: Long life expectancy greater than 1 million operations. **Continuous Duty:** Teflon feed-through terminals used on coil to provide connection ease.

ELECTRICAL SPECIFICATIONS:

Wide Variety of Coil Voltages: 6,12,24,32,48,110,220 D.C. coils at 2.0 watts; 6,12,24,110,220 A.C. volts at 6 volt-amps, 50-60 cps. (Special voltage or resistance available on request.) **Less Than 50°C Temperature Rise Above Ambient:** Maximum operating temperature is 100°C except on special order. Auxiliary contacts available for power control — DPDT at 5a, 110 v A.C. on DK60-2C and DK60-G2C.



DOW-KEY NEW DK2-60 DPDT r.f. SWITCH

For switching two coaxial lines simultaneously. Specifications similar to DK60 series.

DK2-60 .. $19.00

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50 to 70 ohm impedance matching "broadband preamplifier." Increases over-all gain by 1 to 6 "S" units on all bands (1.5 to 30 mc.). 1-⅝" x 1-⅝" x 2-¼". Wt. 10 oz. **Bring up weak signals!**

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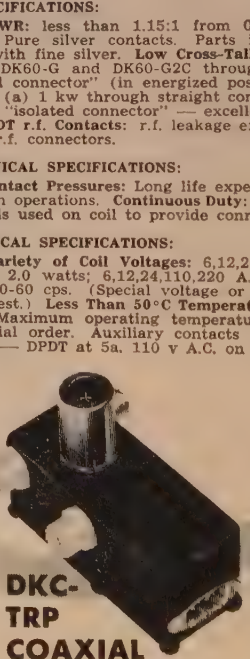

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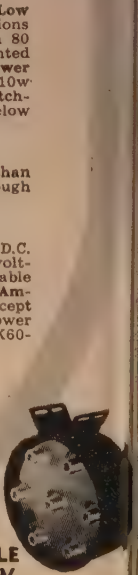

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NEW hy-gain DUOBANDER

for the popular 20-40 meter bands

New compact lightweight unit features Linear Decoupling Stub and Beta Match

The 20-meter and 40-meter bands are becoming more and more popular with amateurs because of more room for expansion and low sun spot activity. That's why the Hy-Gain engineering staff has designed this important new antenna. The Hy-Gain Duo-bander has three full-sized elements on 20 meters and two reduced-size elements on 40 meters. It's compact, lightweight, highly practical—and priced right.

Through the exclusive Hy-Gain development, the linear decoupling stub, the ordinarily outsize 40-meter element is reduced to about ⅔ of the normal size. This makes the Hy-Gain antenna practical, usable where others won't work out, but keeps performance standards high.

The exclusive Hy-Gain advancement of the linear decoupling stub makes two-band operation possible. You do away with inductance and capacity traps, yet the Duobander elements sections can be decoupled very efficiently. The linear loading principle, another Hy-Gain exclusive, does far better than a loading coil in reducing antenna size.

A proven Hy-Gain development—THE BETA MATCH makes possible maximum gain and low standing wave ratio into a single 52 ohm coaxial feed line. For perfect pattern symmetry, a broad band balun is an integral part of the matching system.

SPECIFICATIONS

ELECTRICAL

Forward Gain over a tuned dipole 20 meters	8.1 DB
Forward Gain over a tuned dipole 40 meters	4.9 DB
Front to back ratio 20 meters	20-30 DB
Front to back ratio 40 meters	15-20 DB
VSWR at resonance (typical)	1.2:1
Nominal impedance	50 ohms
Power Capability	5 KW P.E.P., 3 KW AM

MECHANICAL

Net Weight	54 lbs.
Boom Length	24 ft.
Element Length	Approx. 40 ft.
All aluminum construction—Alloy 6063T832—Tensile strength 45,000 PSI	
All hardware iridite-treated to military specifications, all plastic high impact Cycolac	
Wind surface area	6.9 sq. ft.
Turning Radius	24.2 ft.

price $169.50

See your local Hy-Gain dealer or write for Duobander Bulletin.

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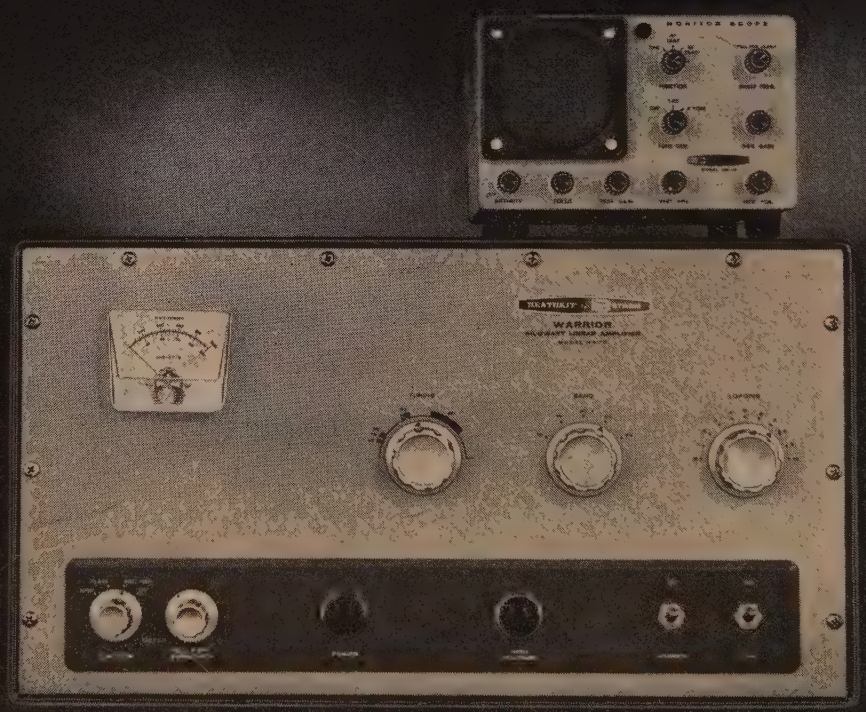

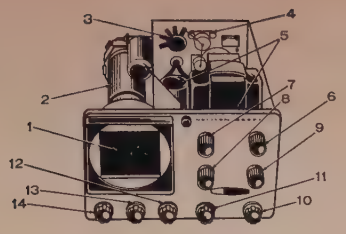

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Go Linear with the Heathkit Desk-Top Kilowatt... $229.95

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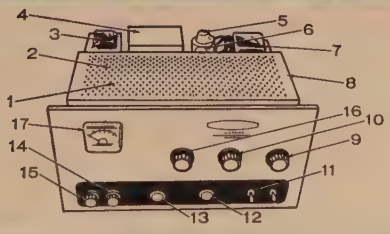

HEATHKIT DESK-TOP KILOWATT LINEAR... $229.95

1. Four 811A's **2.** Fan cooling **3.** 5-50 hy. swinging choke **4.** 8 ufd, 2 KV, oil-filled filter capacitor **5.** Two 866A's **6.** Monitor scope output with level control **7.** 1500 v. Power transformer **8.** Internal RF shielding **9.** Loading control **10.** Band switch, 80 through 10 meters **11.** Power and High Voltage interlocked switches **12.** High Voltage pilot light **13.** Power pilot light **14.** Relative Power sensitivity control **15.** Meter switch with Grid, Plate, Relative Power, and High Voltage positions **16.** Tuning control with band markings **17.** Meter

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THE "DEKAMETER DEVIL"
A 10 Meter Mobile Transmitter

BY MARK H. WIRTH*, K8IVJ

The unit described is a 50-watt crystal-controlled phone transmitter for mobile or fixed use on ten meters. Both the oscillator and driver are 5763s and feed a 6146. The audio driver is designed for a carbon mike input. The plate modulator uses 6L6s in class AB-1. Power is externally provided.

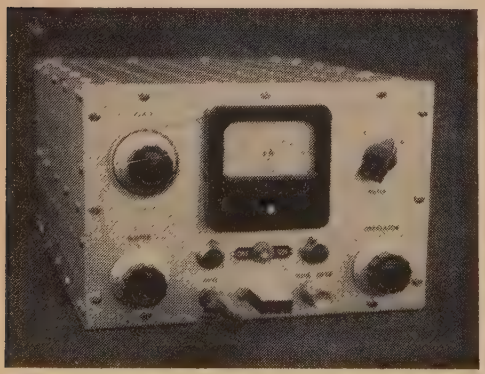
THE unit described is a 50 watt crystal-controlled phone transmitter. Operation is limited to one band to eliminate coil switching. Ten meters was chosen because of the low QRM, the effectiveness of even low-power, and the possibility of interesting "skip" communications, but the design could easily be adapted for use on another band.

Description

The oscillator-doubler and the driver-doubler both use 5763s. The driver is capable of delivering better than twice the necessary drive over the entire band. The bridge-neutralized 6146 final operates into a pi-net output circuit designed for 75 ohms.

The audio driver configuration does away with the necessity of having another transformer for use with a carbon mike. A single 12AX7 or its equivalent, the ECC83, drives the modulator. This uses two 6L6s and is run class AB-1 so as to minimize power supply regulation problems and to reduce drive requirements.

*2521 Pixley Ave., St. Joseph, Michigan.



Front view of the "Dekameter Devil" a mobile or fixed 10 meter transmitter. The home brew cabinet measuring 6 × 9 × 11" houses not only the 50 watt r.f. section but a 25 watt plate modulator. The unit is fully metered.

The entire unit is contained in a homemade cabinet 6 × 9 × 11 inches and weighs about 10 pounds.

Construction

The cabinet and chassis were designed for mechanical stability, resulting in a unit practically as rigid as a block of aluminum of the same dimensions. The chassis and front panel were made out of 0.064" sheet aluminum stock. The cover is 0.051" stock. Solid stock was used for the cover, but perforated stock is excellent if it is available. A 2' × 2' piece of the 0.064" stock was required as well as a 1' × 2½' of the 0.051" material. About 16' of ½ × ½ × 1/16 inch extruded angle stock is also used.

The chassis is formed of a 16" × 9" piece, with 2½ inches folded down at each end. This necessitates double holes for some of the front panel components, but it adds strength and is more convenient than angle bracket mounting of the front panel.

The cabinet pieces are fastened to angle strips all along the edges of the chassis and panel by 6-32 binding-head screws. The holes for these should be drilled and tapped. The two side panels, the top, and the short back panel are all permanently attached to each other by angle pieces. The cover then comes off as one piece. The bottom plate is attached by screws in tapped holes and can be taken off separately. The angle srtips along the bottom of the panel and back chassis lip will have to be notched to clear some components, and corner pieces must be mitered.

After the panel and cover pieces are drilled and cleaned, they should be treated in a strong lye bath for about ½ hour (use enameled containers). They should then be rinsed, wiped with vinegar, rinsed again, and dried. Spray them immediately with Krylon plastic to preserve the satin finish. The chassis and the backs of these pieces shouldn't be coated.

Topside, the modulation transformer requires only a couple of small holes to clear the lugs that are used. The 6L6s and the 6146 must be

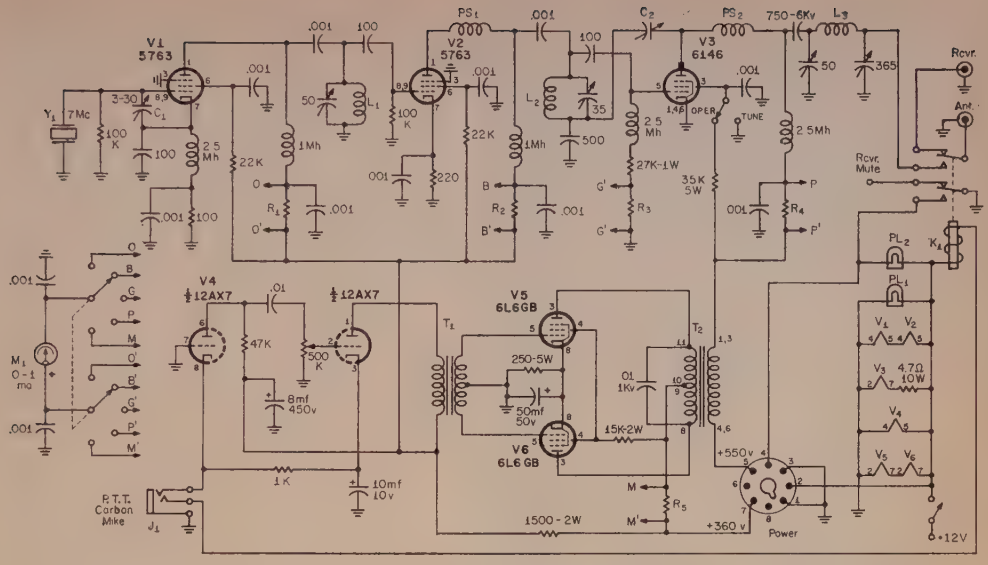


Fig. 1—Circuit of the 50 watt 10 meter phone transmitter. All capacitor values greater than one are in mmf, and are 1 kv disc ceramics. Values less than one are in mf. Electrolytics are indicated by polarity. All resistors are ½ watt 10% unless otherwise noted.

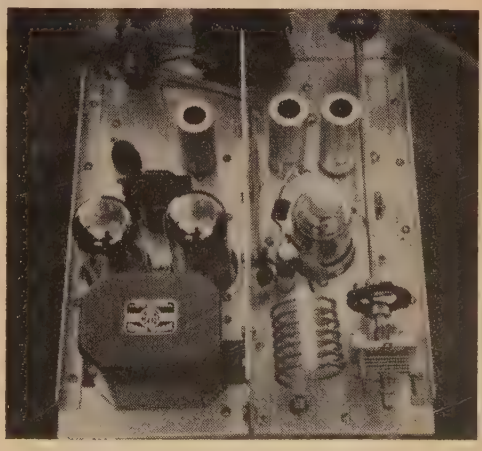
C_1—3-30 mmf mica compression trimmer.
C_2—APC 35 or 50 stripped down to 3 rotor plates.
K_1—D.p.d.t. relay 12 v.d.c., Potter Brumfield KT11D or equiv.
L_1—17t. of B&W 3011 Miniductor.
L_2—6t. of B&W 3011 Miniductor.
L_3—7t. #8e, 1½" diam., 1¾" long (4 t.p.i.).
R_1, R_2—2.04 ohms for 50 ma shunt. 4'10" of #36 wire on a 1 meg resistor.
R_3—11.11 ohms for 10 ma shunt. Use a 10 ohm 1% resistor plus 2'7½" of # 36 on 1 meg resistor.
R_4, R_5—0.503 ohms for 200 ma shunt. 7'7" of #28 on a 1 M resistor.
M_1—0-1 ma, 100 ohms, Lafayette TM-60 or equiv.
S_1—D.p. 5 pos. non-shorting miniature phenolic rotary.
T_1—Audio interstage transformer, Triad A31X or equiv.
T_2—Universal modulation transformer. UTC S19 or equiv.

sunk to provide clearance. Some cheating and clipping is necessary to fit some components in place, such as T_2's mounting lugs, or the socket mounting shells of the 6L6s. The output choke and tank coil both are mounted on their feed-through connectors. The final coil is a 10 meter pi-net coil cut down and compressed. It is held rigid by a frame of polystyrene and by a good deal of *Q*-dope.

Underside, power wiring should be shielded and run together along the modulator shield partition. The shields, by the way, are held on by angle stock, instead of a bent lip, in the interests of chassis strength. The small coils, L_1 and L_3, are mounted by gluing them to cone standoffs with coil dope. The buffer tank capacitor must, of course, be insulated from the chassis and should have an insulated shaft extension on it. As in any piece of equipment where space is limited, great care should be exercised in laying-out and wiring. The layout can be seen from the photographs.

Testing and Adjustment

Adjustment and tune-up are fairly simple. A power supply delivering about 550 v.d.c. at 90 ma and 360 v.d.c. at 140 ma is needed. Preliminary testing of the r.f. section should be carried out with the modulator disabled and a jumper across the modulation transformer secondary. About 300 volts should appear on the plates of the driver stages. Voltages given are for full load conditions and normal oper-



Top view of a crystal controlled 10 meter mobile or fixed transmitter. The three shielded tubes are, from l. to r.: 12AX7 speech amplifier, 5763 oscillator, and 5763 doubler.

The L-shaped shield separates the audio section on the right from the r.f. The audio gain control is the pot above the push-pull 6L6s. C_1, the oscillator feedback capacitor, is mounted between the buffer tuning capacitor and L_1, oscillator plate coil. The stripped-down APC neutralizing capacitor C_2 is mounted left of the 6146.

ation. If a part of the transmitter is disabled, they will probably be higher. The oscillator plate current should dip at 6 ma (meter scale-50), but usually this control will have to be backed off resonance to limit grid drive to the final. The driver dips at about 10 ma. Grid drive to the 6146 should *never* exceed *3 ma* (meter scale = 10), although the driver is capable of providing 6 or 7 ma. Final plate voltage should be about 550 or a little less. Plate current should load up to about 90-95 ma, giving 50 watts input (meter scale = 200). When tuning up, the function control should be switched to the TUNE position, grounding the final screen and limiting tube current until proper drive is established and a tentative plate dip found. It may then be switched back to OPERATE.

The modulator may be tested by disconnecting the B-plus from the modulation transformer secondary and attaching a resistive load (about 3000 ohms, 25 watts or more). If phones are tapped across about 20 ohms of the load, the quality and hum content can be checked. The level should be set for about 275 volts a.c. across the resistor when humming into the mike. Be sure all supply voltages are as they will be in normal operation. Plate current to the modulator should run about 100 ma, with slight kicks on modulation (meter scale = 200). Restore everything to normal; try a little on-the-air testing and you're all set!

Notes

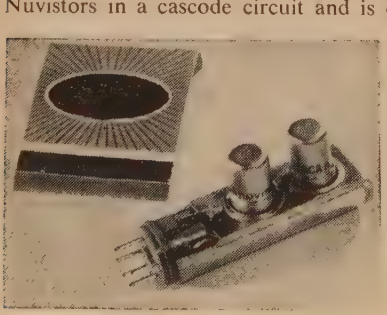
The power supply used should be of the transistorized variety, controlled by a heavy-duty relay remotely connected to the antenna relay. This way only filament current is drawn in standby. A key jack could easily be added in the rear if c.w. operation is desired.

The rig has been mounted under the lip of the dash on the passenger's side with a couple of straps. It has been in operation for about four months, and the only complaint is an insignificant amount of power supply whine resulting from insufficient filtering. ■

New Amateur Products

The Raytronics Nuvistaplug

A TOTALLY new item just received here at *CQ* is the Raytronics Nuvistaplug. When the advantages of the Nuvistor are considered, it seems surprising that it has found so little application below 50 mc. The Raytronics unit, however, is a direct plug-in replacement for 7-pin miniature pentode r.f. amplifier tubes used in most h.f. receivers. It consists of 6CW4 and 6DS4 Nuvistors in a cascode circuit and is constructed in such a manner that the original pentode is merely removed and replaced by the Nuvistaplug. All supply voltages are taken from the r.f. amplifier tube socket and only minor repeaking of tuned circuits is required.



Although the circuit gain is not increased by any startling measure, the greatly reduced noise figure (about 3 db) results in a substantially improved s/n ratio. In other words, more signal; less noise.

At only $17.95 the Raytronics Nuvistaplug should appeal to many who desire to improve their receiver's performance without hacking into the store-bought gem. For a more detailed description, check the ad on page 92.

The L-C Box

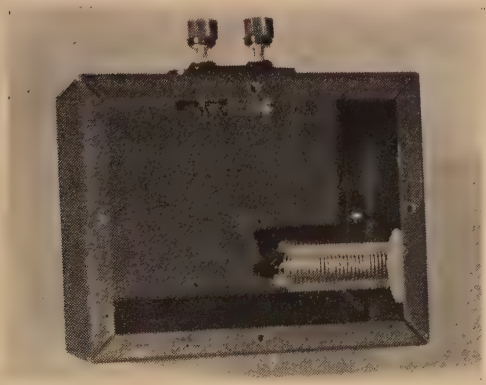
BY JOSEPH TARTAS*, W2YKT

There are many times when an amateur desires to measure the inductance of a coil or to determine the value of an unidentified capacitor. Through the versatility of the Grid Dip Oscillator and the simple device to be described, you can prune a coil, set a trimmer capacitor, or determine the tuning range of a variable capacitor with good accuracy.

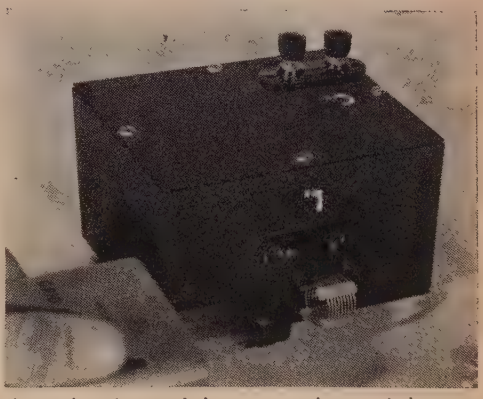
THE g.d.o. is, next to the multimeter, one of the most common items of test equipment in both the lab and the home shop. Its versatility is almost unlimited, and its ability to measure resonance can be used to measure inductance or capacity. Because a resonant circuit is nothing more than a combination of these two, a chart can be made for the values of one, with the other a predetermined and fixed value.

In the *L-C* box, separate terminals are used for the measurement of inductance and capacity. The terminals marked L_x have a standard capacitor connected across them, consisting of a 100 mmf, 5% tolerance, silver mica capacitor. The coil to be measured (L_x) is connected across these terminals and the resonance measured by coupling the g.d.o. to the coil and tuning for a dip on the meter. Once the frequency has been determined, the actual inductance of the coil can be found from the chart of Frequency vs Inductance shown in fig. 1.

*1204 Ringwood Avenue, Haskill, New Jersey.



Inside view of the L-C box. The access hole for coupling when measuring capacitors appears at the at the right alongside the coil. The C_x terminal strip to which the coil is attached, is hidden behind the coil. The standard capacitor may be seen at the top. The cover, removed for the photograph, should be in place at all times.



The g.d.o. is coupled to an unknown inductance connected across the L_x terminals. The g.d.o frequency reading is then located on the chart and converted into an inductance value.

Determining Capacity

To determine capacitance, the unknown capacitor is connected across the terminals marked C_x. These terminals have a standard coil of 5 microhenries connected across them. This is made up with exactly 24 turns of B&W #3011. The coil is mounted as shown in the photograph, and an access hole is cut in the end of the box so that the g.d.o. may be coupled to the internal inductor. When the resonant frequency is determined, the actual capacity is found from a chart of Frequency vs. Capacity.

It is a simple matter to make test jigs for the individual measurements, but such jigs are easily misplaced or broken. Combined in a metal utility box, or a plastic box, a complete and permanent test setup is available for use with the g.d.o.

The total cost of the unit is less than $2.00, and can be made in a few hours. The Eico 710K Grid Dip Oscillator, shown in the photographs, is typical of the many that are available in kit form for under $30.00. The combination of the g.d.o. and the *LC* Box is often equivalent in performance to expensive laboratory equipment that is beyond the means of the average amateur or experimenter.

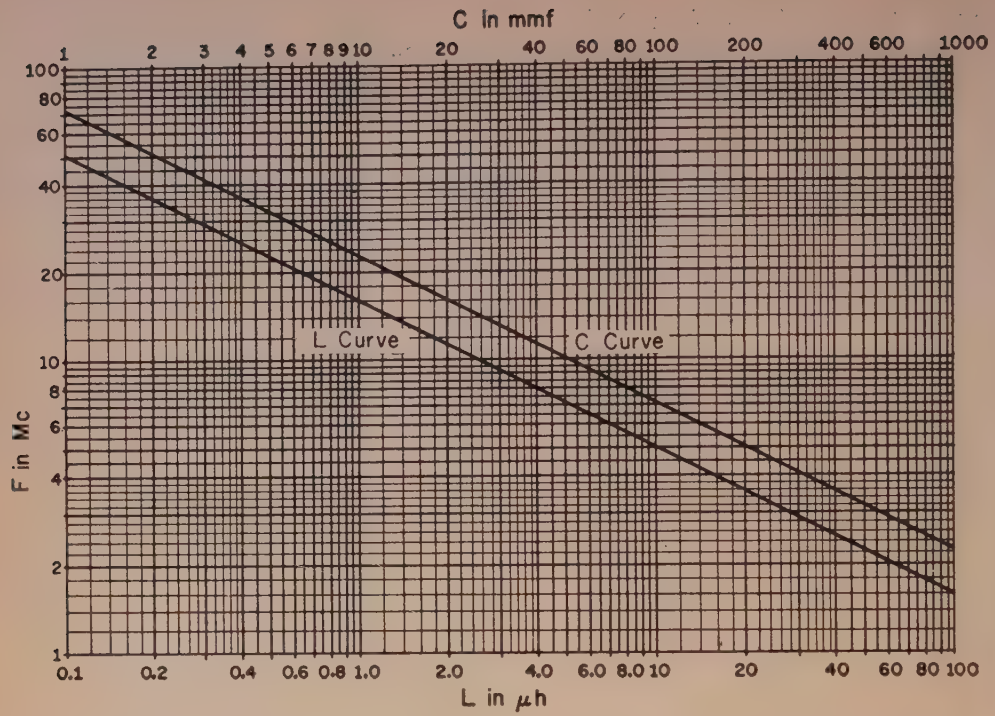
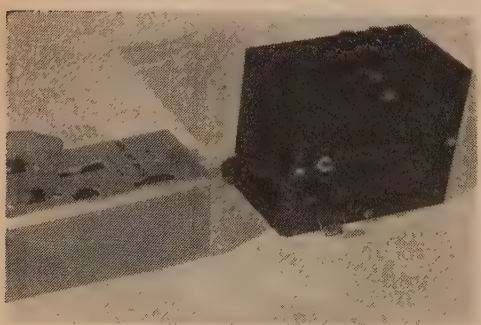


Fig. 1—This chart enables you to convert the frequency readings of the g.d.o., obtained with the aid of the L-C box, into values of L or C. Locate the frequency on the vertical axis, follow along until the L or C curve is intersected and read up or down for the answer in mmf or microhenries.

Construction

The box used, if of metal, should be a minimum width and height of three times the diameter of the standard coil. A plastic box would do as well, and can be smaller. The reason for this lies in the fact that the coil inductance is reduced by the presence of a metal wall unless it is at least one coil diameter away from the coil. A plastic box would have no effect, and does not even require a hole in it.

Position the terminals that hold the standard inductor at the same height as the hole, or in the case of the plastic box, so that it is at the same height as the coil of the g.d.o. when it is flat on the bench.



The g.d.o. is coupled to the internal coil through the opening in the side of the case. The unknown capacitor is connected across the C_x terminals. The terminals are Eby type 21R.

Operation

To measure an unknown inductance, connect it across the L_x terminals, using minimum lead length. Lay the box on its side and couple the g.d.o. coil closely to the coil under measurement. Tune the oscillator through the range of 1 to 100 megacycles, starting with the lower range and changing the coils as needed. When a dip is observed on the meter, move the g.d.o. away until only a very small dip is visible. Read the frequency from the dial and locate this frequency on the vertical axis of the chart. Read across until it interesects the L line. From this intersection, drop down and read the value of inductance directly in microhenries.

For an unknown capacity, connect the capacitor across the C_x terminals and couple the g.d.o. through the end hole to the internal standard coil. Repeat as before, except that the frequency line should intersect the C line and the reading is in mmf on the top of the chart.

The tuning range of a variable capacitor may be found by setting it first to minimum, and then to maximum capacity, using the two resonant frequencies to determine these values.

Because of the inherent capacities in the terminals the error in accuracy will increase for small values, but is less than 10% for values below 6 mmf. For large values, this error is negligible. ■

DXpedition To Africa

Part II

BY GEORGE R. (DICK) McKERCHER*, WØMLY

As YOU WILL remember, last month I was sitting in my hotel room in Brazzaville crying in my beer because the second receiver had not yet arrived. For some unknown reason, I decided to stay in Brazzaville for one extra day before moving on to Bangui, Central African Republic. So, on Sunday morning I went to the airport to change my reservations. To my dismay, everything was at a complete standstill. The President of the Republic of Congo was returning from a trip and in the due course of events I arrived amidst the cheers from the throng which had gathered at the airport.

But, as fate would have it, while I was wandering around the airport, I came upon a KLM wagon with air freight piled on top of it. With nothing better to do and being of curious nature, I started looking over the freight and lo and behold on one end was a box with a Hallicrafter label. My excitement at this point must have reached a fever pitch and as I was unpiling boxes to see if this one might belong to me, the guards started coming out on the double. Then things really began to happen. With me trying to haul the receiver off and the guards holding me back, the airport manager came over to see what was the cause of the trouble and why such a sizeable crowd had gathered on a quiet Sunday morning. He explained that KLM was going to open an office but had not done so as of yet and suggested that I should come back next week. When I had come so close to getting my receiver I was not about to let it out of my sight. So, we compromised. He went up to call the KLM agent and I stayed and watched my receiver. In a couple of hours the agent arrived and he explained that he was very sorry but the office had not yet been completed so they were not open for business. All hell broke loose again and in no uncertain terms I told him I was going to take the receiver with me or that I was going to go to jail trying.

Safe At Last

Finally he agreed to take the freight charges and he let me take the receiver. This was highly irregular, he told me. I was the first KLM customer in Brazzaville! I thought I had won this hard fight when I next discovered I could not have the receiver, due to Customs, and since this was Sunday, Customs was closed. At least I could understand this so I escorted the receiver to the Customs House and left after I was sure it was safely under lock and key. I was so relieved that I forgot my original purpose for coming to the airport and did not cancel my reservation for Monday. Sunday night was a night of rejoicing.

During the course of events in Brazzaville, I obtained a license to operate in TN8-land if I had the desire to do so. Since my equipment was sent from TR8- to TL8-land, there was not much chance. This was fortunate, since I had the opportunity to operate on s.s.b. for a few contacts as we will see later. One night, while visiting with TN8AJ, I did operate as WØMLY/TN8 for 46 contacts on c.w. I had some very nice visits with the TN8 boys. There are five hams there but only two are active and one does not QSL, hi.

Back to the story. Moday morning, bright and early, I went out to Customs. I was there when they opened the office and explained that this receiver was the one which Air France had misplaced and that I had paid the duty for all equipment in Liberville, Gabon. I produced the papers to prove this and also the claim against Air France for the loss. They told me

The local food situation was from hunger and far from being the best from the standpoint of cleanliness. To avoid any DXpedition-killing illness, Dick shunned local produce in favor of canned food wherever possible. Water, too, was of doubtful quality so beer or tea were the order of the day.

*Perry, Iowa.

Slightly askew, but workable just the same, is the beam used by Dick at WØMLY/TL8. The modern Hotel Rock in Bangui, the site of his Gabon operations, stands in striking contrast to the mud hut Dick was to operate from in the Republic of the Congo.

that the duty I had paid in Gabon was not applicable in Congo! So more talking ensued and I told them I knew that duty paid in any one of the Federated States which include Gabon, Congo, Central African Republic and Tchad would apply to all. They were quite surprised that I knew this, so there was nothing for them to do but shake their heads hopelessly and agree with me. They were probably thinking, what crazy people, these Americans.

With the receiver on my shoulder, I headed for the Air France freight office where I made out the papers to ship it to Bangui, but only after they promised that the receiver would go on the same plane on which I was to travel. With this accomplished there was nothing to do but go back to the bar run by TN8AY. I think that's all I better tell of this story!

The plane was due to leave at 1:30 P.M. Tuesday, so at 11:00 A.M. I was at the airport and checked the way bills for the freight going to Bangui and sure enough the receiver was there. I watched them load it on the plane and then went to lunch. I then returned to check-in and realized suddenly that I had not changed my reservation and not knowing what else to do I decided I had to bluff my way. I explained that I had telephoned on Sunday to change the flight. They proceeded to call and check this and found there was no record. I steadfastly insisted that I called so they decided to check with the Sunday duty clerk. The day was saved when he could not be located and since they had no way of checking for sure they put me on the plane.

At Bangui

The plane left on schedule and arrived on schedule, which is truly amazing. I arrived at Bangui Airport uneventfully and went to the American Embassy to notify them of my arrival. I was met with a very cold shoulder. They wanted to know why I had shipped the radio equipment from Liberville to the Bangui Embassy freight collect. I showed them the shipping bill and it plainly indicated that the equipment was to be left at the airport at the Air France desk. At this point, everyone relaxed and they told me the equipment was upstairs. On the way up I came cross Bud, K4ASU, installing teletype equipment. He had already opened the boxes and discovered who I was and if I did not arrive when I did, I believe he would have had the equipment on the air. Without any difficulty, I checked into a bottom floor room in the Hotel Rock. The next day I picked up the receiver at the airport and all the equipment was in one place for the first time since I left New York.

I went to the PTT (Post Telegraphs & Telephone) in order to obtain operating permission and was advised that Mr. Foucauld, who was the person to grant this permission, would not be in that day; however, he made an appointment for me on the following day. During the day, I checked the hotel for possible radio operation and decided to move to the top floor. It was a beautiful location and I spent the remainder of the day installing the equipment and the vertical.

The Ticket

Next morning I filled out the necessary forms for operating permission and was informed in an apologetic manner that it would cost me 400 francs or $1.00 for the license. I think I almost tore my pocket getting out the money. Mr. Foucauld stamped the papers and was in business. I was confined to twenty meters for some unknown reason but I did not care to argue. The reason operating permission was so easily obtained was due to the letter of authorization to operate issued in Gabon by the Minister of Interior. That letter opened a lot of doors.

Operation as WØMLY/TL8 started June 13th at 1815 GMT with G4CP followed by JA1DM. First Ws were W4ML at 1843 followed by W1KXU. That night was really a mad house. K4ASU and myself divided the operating. The following morning I was told I would have to move rooms as I caused too much noise at 2:30 A.M. local time. Since I did not want to be put in the street at this

Some 2340 contacts after arriving in Gabon (TL8), Dick was on the road again. This time, however, his complete Hallicrafters rig was tucked safely under his wing in the rear of a truck. Next stop TN8.

time, we moved all the gear into another room. The next day Bud and I put up the beam for better operation to the states and it was well worth the effort. Closed operations after 2340 contacts with W7OCL at 0310 GMT June 18th.

TN8 Operation

Having made inquiries I figured I could get to Bayanga in the Republic of Congo for a couple of days of s.s.b. operation as there has been no previous s.s.b. operation from Congo previously, but quite a bit of c.w. operation. After four hours sleep I got up and packed the gear into the truck for the ninety mile trip to Bayanga. What a ride that turned out to be. Where they got the nerve to call that road a "road" much less put it on a map, I'll never know!

I arrived about 3:30 in the morning local time and proceeded to bargain for a mud hut which I could use for an operating shack. I came to terms and started to set up the equipment. Everyone in the village turned out and stood around and watched. I just put everything inside the hut, with the vertical in position and it started to pour. The roof seemed to leak everywhere. I finally got just about everything covered but all the gear was wet in the boxes. Nevertheless, when I fired up at 1810 GMT on June 18th everything worked fine and SM5UF was there waiting for me. He was followed by 4X4IX. The first Ws were W8EAP at 1845 GMT followed by K1ELS. All operation was confined to s.s.b. as no key or keyer was brought along. This was to be a test run to see how the s.s.b. boys would back up their plea for a new country. I was to depart on June 20th for my return to Bangui but the rains had caused the river to rise and covered part of the "road" so we could not leave until Tuesday.

A total of 1140 contacts were made from TN8 with the last entry in the log being K6LED. So, after five hours sleep, back we went to Bangui.

TT8 Operation

This part of the trip was very uneventful. I started from Bangui in the Central African

The "Route 66" of the Congo! This narrow, rutted dirt road was responsible for many "saddle-sores" on the grueling 90 mile trek from Bangui to Bayanga.

Some 1140 s.s.b. contacts were made from WØMLY/TN8 in Bayanga. Dick's departure from the Republic of the Congo was delayed by a swollen and rather turbulent river that covered part of the "road."

Republic where I boarded a plane for Fort Archambault, Tchad. This spot was selected to cut expenses, which were half of what it would have cost to go to Fort Lamy. When I arrived in Fort Archambault, I was the only passenger to get off the plane. I waited for the equipment to be unloaded and then started looking for transportation to the hotel which was three miles away. There was no transportation available into town, so I hired six boys at $2.00 each to carry one box of equipment to the hotel. We were quite a sight going down the main street headed for the Hotel Chasser. At the hotel, my room was waiting as I had reservations which I made in advance and had also determined that power was available. Getting set up in my room was no problem and I had a native climb a tree and put the vertical as near to the top as possible. It was not in the clear, but it worked out very well. Operation was started on the 22nd of June, 1962 when the first CQ was answered by VU2JA at 1630 GMT. He was followed by W1ZW and W2ZX. The battle was on once again.

At 2100 GMT the lights went out and after I waited for a few minutes, I decided to check on the trouble. The manager informed me that they stopped the power plant in the hotel at 10:00 P.M. local time. This was the start of some fast talking. It seems the boy who operates the plant is only hired until 10:00 P.M., so with the promise to pay for his wages for four extra hours a day, plus the extra fuel bill, I was back in business. All told, it came to $5.20 per day extra. The owner of the hotel was quite willing since previously, they used candles in the bar after 10:00 P.M.

This was the first time I had ever operated completely under mosquito netting. The bugs and mosquitos were really terrible.

The next morning I was awakened by a pounding on the door. Making myself presentable, I answered the door and was greeted by the local law enforcement. They were quite

[*Continued on page 92*]

A $5 Frequency Standard

BY MICHAEL I. NEIDICH*, K2ENN

If you have been deprived of the operating convenience and security that an accurate crystal calibrator affords because of the high cost of the commercially available units, then here is your chance to remedy the situation for less than five dollars.

A 500 kc precision crystal oscillator originally manufactured by RCA is now available from Barry Electronics[1] and is a natural for conversion to a crystal calibrator. The unit employs a precision 500 kc crystal, a crystal oven, and a 5840 sub-miniature pentode in a simple oscillator circuit. One side of the module has one or sometimes two adjustment holes. By unsoldering a small disc which covers the hole marked FREQ-ADJ, a ceramic trimmer is found which adjusts the crystal frequency. The oscillator is supplied set to with in 0.0012% of 500 kc. Although this is only 6 c.p.s. at 500 kc, at the 60th harmonic (30 mc) the error can be as much as 360 c.p.s. To minimize the error, the completed calibrator should be adjusted for zero beat with the 5 or 10 mc WWV signal after allowing a one hour warm up.

Hook Up

Only four connections need be made to the receiver. They are: B+, preferably controlled by the front panel CAL switch, if available; 6.3 v.a.c. at 300 ma; ground return, and a lead to the antenna terminal. The B+ must be dropped to 75 volts for proper operation. The current drain at 75 volts is 2 ma and therefore the dropping resistor (in K ohms)

$$R_s = \frac{E_s - 75}{2}$$

The series dropping resistor used in my unit was 35K. This is calculated as 70/2, or 35K since the accessory voltage is 145 volts. If regulated voltage is available, it can be used, but there is little improvement to be made!

The filament and oven heater current can be either a.c. or d.c. at 6.3 v. Nothing need be said about the ground return. The output

[*Continued on page 90*]

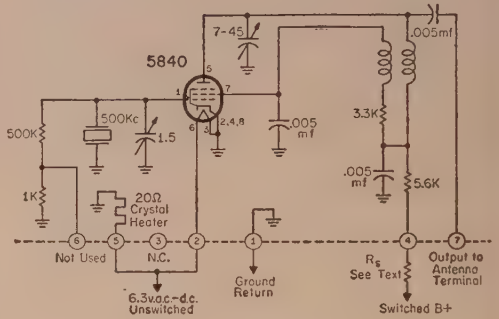
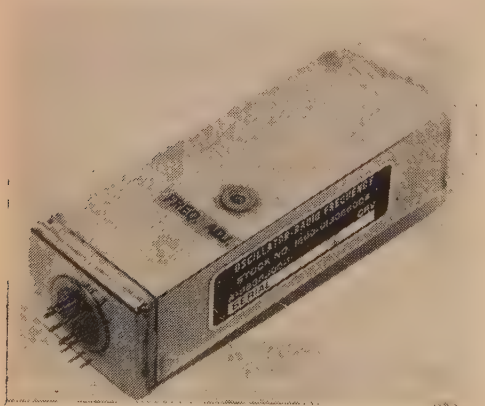


Fig. 1—Circuit of the 500 kc frequency standard. Lug 6 while not used for hookup is a test point to measure the oscillator grid voltage. Note should be made of this voltage during normal operation and it may then serve as a reference when operation is in doubt. The normal voltage will be fractional as it is only 1/500th of the actual grid voltage.



The 500 kc standard can be adjusted through the opening marked Freq. Adj. It may be necessary to unsolder the cap in some models. This may be done without hesitation as the unit is not hermetically sealed.

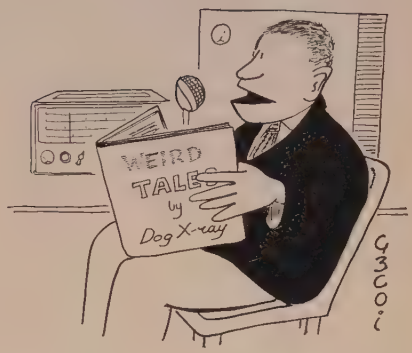
F_{mc}	db/S9	F_{mc}	db/S9
3.5	90	21.0	43
4.0	85	21.5	40
7.0	65	28.0	39
7.5	52	28.5	37
14.0	50	29.0	35
14.5	45	29.5	23

Table I—S meter readings versus oscillator harmonics.

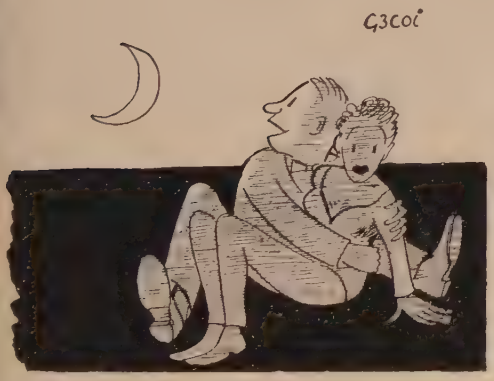
*931 Walt Whitman Road, Huntington Station, N.Y.
[1]512 Broadway, New York 12, N.Y.

HAM-lets *by g3coi*

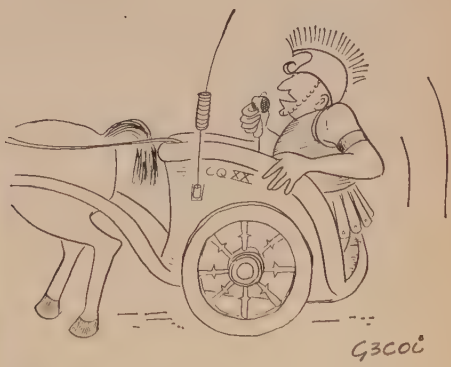
". . . and now, gentlemen, our Chairman will give his annual report."



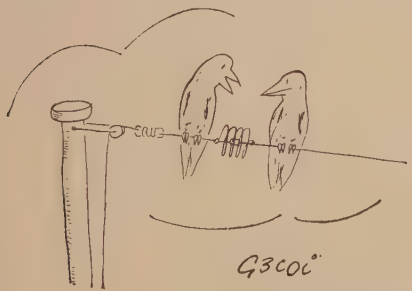
". . . Well, that's about the story from here."



"Uh, oh, it's time for my 2 meter sked."



". . . and the handle here is ben."



"Watch it, it may be a trap!"

"The name here is Frank and everything is homebrew."

4U1ITU ... Amateur Radio Station of the International Telecommunication Union

BY GEORGE JACOBS*, W3ASK

Since the first days of June, the exotic call sign "4U1ITU" has been heard on various amateur bands. This is the story behind this unusual station, and the important milestone it represents for amateur radio.

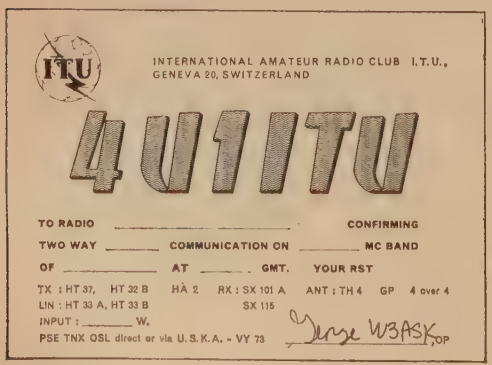
4U1ITU, the official amateur radio station of the International Telecommunication Union, began formal operation at 12 noon, Central European Time, June 10, 1962. The station had been on the air sporadically during the first week of June, testing equipment. Opening ceremonies for the station, held at the new ITU building in Geneva, Switzerland, were attended by more than 150 radio amateurs, telecommunication officials and distinguished guests from all parts of the world.

4U1ITU was officially opened by the Honorable Gerald C. Gross, Secretary-General of the ITU. Mr. Gross has been a radio amateur for nearly forty years and is licensed as W3GG and HB9IA. The first reply to the Secretary-General's CQ came from DL4VK, and during the 24-hour special ceremonial operating period which followed, more than 500 QSOs were made with 55 countries representing all continents. Among those attending the inauguration ceremonies from the United States were John Huntoon, W1LVQ, representing the American Radio Relay League and the International Amateur Radio Union, Travis Marshall, K9EBE, representing the Hallicrafters Co., which donated, as a gift, much of the equipment being used by 4U1ITU, Don Chesser, W4KVX, George Jacobs, W3ASK and Al Embrechts, W2YEJ.

For nearly a century, the International Telecommunication Union has been the administrative center for world-wide communication. The Union, now a specialized agency of the United Nations, is responsible for administering the international regulations which govern and control the use of radio, telephone and telegraph communications throughout the world. The Union is also responsible for maintaining and extending international cooperation for the improvement and rational use of telecommunications, and for promoting the development of technical facilities and their most efficient operation. One of the Union's most important responsibilities in the field of radio communication is the registration and coordination of frequencies used throughout the world, in an effort to avoid or reduce interference. More than 100 countries participate in the work of the ITU.

The International Telecommunication Union is one of the oldest international organizations, having been founded on May 17, 1865. Until the end of the second World War, the Union was located in Berne, Switzerland. Earlier this year it moved from its post-War headquarters in Geneva's historic Palais Wilson, to a modern office building in Geneva's Place des Nations. 4U1ITU is located on the top floor of the

*PROPAGATION Editor, *CQ*.



Sample of the QSL card being sent from 4U1ITU to confirm contact with this unusual station. During the first 24 hours of its operation, the station was manned by HB9ET, HB9IA, HB9SI, HB9UD, F9DD, F9DG, DL3DU, SM5ANV, G8KS, PAØFX, PAØCS, W1LVQ, W2YEJ, W3GG, W3ASK, W4KVX, K9EBE, and others.

One of the two operating positions at 4U1ITU, headquarter's station of the International Telecommunication Union in Geneva, Switzerland. Shown at the operating desk is Miss Vera Jackson of the ITU staff. In the rear, left-to-right, are: Gunter Joraschkewitz, HB9UD, station manager for 4U1ITU, and Walter Baumgarten, PAØBB/HB9SI, Secretary-Treasurer of the International Amateur Radio Club.

newly erected ITU building. The station's equipment has been donated as part of a gift from the United States, marking the occasion of the Union's move to its new, permanent headquarters.

Since the ITU is a specialized agency of the UN, its amateur radio station has been assigned call-letters from the 4UA-4UZ block, which has been allocated to the United Nations. This is the first time that call-letters from this block have been assigned to an amateur radio station. Permission has been granted from the Swiss Government, the UN and the ITU for 4U1ITU to operate from the ITU building with extra-territorial privileges.

International Amateur Radio Club

The station's equipment, and the maintenance and operation of 4U1ITU, have been entrusted to the *International Amateur Radio Club*, a newly formed club under the sponsorship of the ITU. Membership to the IARC is open to all radio amateurs in the United Nations and its specialized agencies. Delegate membership is open to all officials attending conferences of international organizations in Geneva, and who are licensed radio amateurs. Associate membership is open to *all* other licensed radio amateurs upon their expressed request to become associated with the club. The officers of the International Amateur Radio Club are: President: John H. Gayer, member of the International Frequency Registration Board of the ITU; First Vice-President: M. Joachim (OK1WI), an official of the International Radio Consultative Committee of the ITU; Second Vice-President: Willi Menzel (HB9AAB), a technical-expert with the ITU; Secretary-Treasurer: Walter Baumgarten (HB9SI), a telecommunication official with the United Nations. (Walter may be remembered for the long string of exotic calls he has held in the past, among them being PAØBB, ZC6UN, ZC6UNJ, AR8UN, K2UN, and SV5UN.) Membership details can be obtained directly from the Secretary-Treasurer, International Amateur Radio Club—4U1ITU, ITU Building, Geneva 20, Switzerland.

All members, delegate members and associate members of the IARC must be in agreement with the following aims and purposes of the club: 1. through amateur radio, to further international friendship and understanding; 2. to cooperate with all radio amateur associations; 3. to promote the proper use of the bands allocated to the radio amateur service; 4. to provide the organization through which the club's transmitting and receiving station (4U1ITU) will be managed and operated.

4U1ITU is neither a DXpedition, nor a short term operation. The station plans to be on the air daily, operating on all bands between 2 and 80 meters. Specific operating schedules will be maintained on c.w., a.m. and s.s.b., and teletype may be added in the future. A distinctive QSL card has been designed which will be sent to confirm contact with the new station.

The inauguration of 4U1ITU, the first radio station ever to be sponsored by the ITU, marks a milestone for amateur radio. Formal identification with the ITU in this way not only raises the prestige of amateur radio, but provides for the first time, a truly international station that may be operated by licensed radio amateurs from all parts of the world.

". . . This is TT8XY calling CQ . . ."

A Gated A. V. C. System for S. S. B., A. M., and C. W.

BY LARRY K. AMODEO*, W2PCJ

This gated a.v.c. system provides a fast attack time, a hold time of 0.12 seconds and a fast release time when the signal is removed. These characteristics will provide efficient a.v.c. action for all modes of operation.

Most communication receivers which have been modified for s.s.b. reception posses undesirable a.v.c. characteristics. These receivers, when modified, have either a fast attack, fast release, or a fast attack slow release a.v.c. time constant.

The fast attack, or rapid rise of a.v.c. voltage with a received signal, cannot be classed as an undesirable feature in any a.v.c. system. Therefore, in any receiver modification this feature must be retained. The fast release, or rapid decay of a.v.c. voltage is undesirable for s.s.b. reception because the short time constant allows the a.v.c. voltage to follow the audio component, thereby creating distortion. The slow release, or slow decay of a.v.c. voltage, has the advantage of holding the a.v.c. voltage constant during speech; however, it does have the disadvantage of holding the receiver insensitive for an excessive period of time after the input signal is removed.

A more effective a.v.c. system would be one which possesses a fast attack time, an a.v.c. "hold" time of approximately 0.12 seconds (this would not allow the a.v.c. voltage to follow the audio) and a fast release time when the signal is removed. This system would produce an a.v.c. voltage, when receiving sideband, comparable to that produced by an a.m. signal.

The circuit described here provides those desirable a.v.c. characteristics previously outlined and utilizes only 3 transistor stages. All the components are mounted on a 1½" × 2¾" phenolic board. The transistors used can be any inexpensive type provided the maximum collector to emitter voltage rating (V_{ce}) is 25 volts or more. However, if germanium transistors are used it may be necessary to mount the unit outboard on the receiver cabinet or chassis so the high ambient temperature in the cabinet will not degrade transistor operation. During the developemnt of this unit it was found that when mounted inside the receiver cabinet, the unit did not function properly after the receiver was on for one hour or more. Receiver cabinet interior temperatures will not be a problem if a selection of silicon transistors is available. The unit may then be mounted inside the receiver cabinet, as silicon transistors will operate satisfactorily up to about 150° C.

Receiver Requirements

The circuit should work equally well with most receivers if the following requirements are met:

1. The input source impedance from the de-

*18 Adrian St., E. Northport, N.Y.

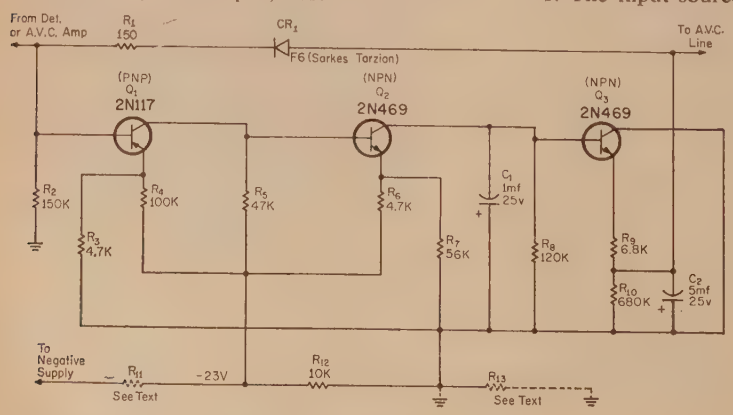
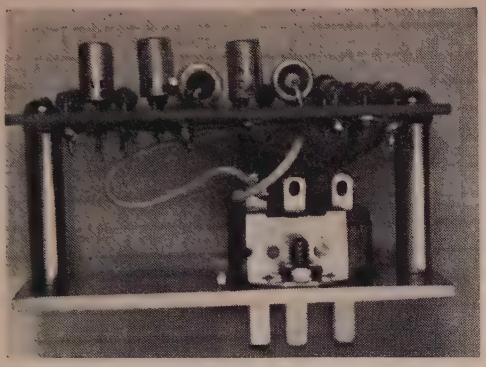


Fig. 1—Circuit of the gated a.v.c. system employing 3 transistors, applicable to most receivers. All resistors are ½ watt ± 5 per cent. The need for and the values of R_{11} and R_{13} are discussed in the text.



Side view of the gated a.v.c. circuit constructed on a small piece of perforated board. When installed, the unit is supported by the power plug.

tector or a.v.c. amplifier is less than 10K ohms.

2. The output load impedance to the a.v.c. line is 2 megohms or more.

3. The a.v.c. voltage is always negative and does not exceed an average value of –10 volts.

4. Minus 23 volts must be available. If more than –23 volts is available R_{11} will have to be added.

$$R_{11} = \frac{E_{\text{su-ply}} - 23}{3} \times 1000$$

The circuit has been designed so that a minimum a.v.c. voltage of about –1 volt is required before the a.v.c. hangs. Any voltage less than this will provide a fast attack—fast release a.v.c. characteristic. This was done so low level noise and weak signals would not cause the a.v.c. to hold.

Circuit Operation

The circuit operation is as follows: Normally Q_1 and Q_2 are cut off because the emitters are back biased. Q_3 is forward biased and will conduct with any a.v.c. voltage produced between 0 and –1 volt. Q_3 is in parallel with C_2 and it provides a fast discharge path for any voltage produced across C_2. The purpose of CR_1 is to allow C_2 to charge to the peak a.v.c. voltage, and prevents C_2 from discharging via Q_1 or the a.v.c. detector. When the a.v.c. voltage exceeds –1 volt, the emitter of Q_1 becomes forward biased and both Q_1 and Q_2 conduct. When Q_2 conducts, –22 volts is developed across R_8. This voltage is applied to the base of Q_3 and is sufficient to cut off Q_3. Capacitor C_2 can now discharge through R_{10} only, which provides a very long time constant. As long as Q_3 is cut off, C_2 will hold the a.v.c. voltage relatively constant during reception of s.s.b. Q_3 will remain cut off during normal speech because of the time constant of C_1 and R_8. However, when the input signal is removed, C_1 discharges through R_8, decreasing the Q_3 base voltage to the same level as the emitter voltage (approximately 0.12 seconds later). Q_3 will then conduct providing a rapid discharge path for C_2, thereby removing the a.v.c. voltage. The circuit provides equally efficient a.v.c. action for reception of s.s.b., a.m., and c.w.

Most receivers have no voltage on the a.v.c. line when there is no signal. However, some receivers (75A-2, 75A-3, 51-J, etc.) require a minimum bias voltage on the a.v.c. line even when no signal is present. For these receivers resistor R_{13} has been added to provide a static negative voltage on the a.v.c. line. The value of R_{13} may be computed as follows:

$$R_{13} = \frac{V_{\text{min. Bias}}}{3} \times 1000$$

Results

The a.v.c. circuit has been added to a Collins 75A-3 receiver with excellent results. The most impressive features are the noticeable decrease in audio distortion on s.s.b. and the relatively constant audio output with varying signal input. The casual observer, viewing an S meter with s.s.b. reception would swear the signal being received was a.m. because his S meter follows only the QSB and not the audio.

The circuit has also been used on c.w. reception very successfully. The a.v.c. will hold with c.w. speeds of 5 w.p.m. or faster; again, the S-meter follows the QSB and not the c.w. pulses.

The unit has been in operation for nine months with no degradation of the transistors or receiver performance.

Hints for Hams

Useful Parts From Inhaler

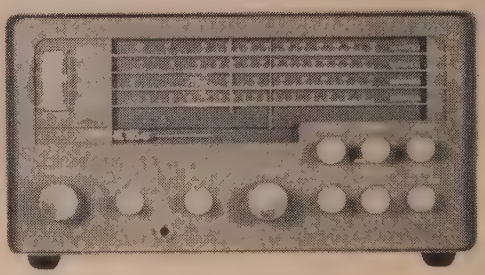
Next time you catch cold and buy an inhaler, be sure to save it after its contents have been exhausted. The outside cap makes a good low-loss coil form as shown in the photo, foreground. Saw off the bottom of the inhaler near the threads, poke out the plug and you have a handy wire or cable grommet for a chassis hole. The plug and body of the inhaler could also come in handy as insulators of some sort.

CQ Reviews:

The National NC-105 Receiver

BY BOB MEYER*, W2UJJ AND AND ART SEIDMAN†, K2BUS

NATIONAL RADIO COMPANY has brought out a new general coverage receiver, the NC-105, which is intended for the beginning ham and the short-wave listener. Its 0.55 mc to 31 mc frequency range is covered in 4 bands, and a 0-100 logging dial provides bandspread for the amateur and short-wave bands. The set is transformer operated and employs six tubes (including a rectifier) in a single conversion (i.f. is 455 kc) circuit. A.m., c.w., and s.s.b. reception are provided for, and selectivity control is achieved by a peaking-type Q-multiplier. A five-inch speaker is mounted on the top underside of the blue-gray metal cabinet and an S-meter is located on the front panel. A complete tabulation of the receiver's specifications is given in Table I.



Front view of the NC-105. The controls are, bottom row, l. to r.: Bandspread, Band, Audio Gain, Main Tuning, BFO, Noise Limiter, and Function. For the upper row, the controls are l. to r.: RF Gain, Selectivity, and Pitch. The phone jack is mounted between and below the Band and Audio Gain controls.

Detailed Circuit Description

A block diagram of the NC-105 is shown in fig. 1. A 6BE6 pentagrid converter is used for the local oscillator and mixer functions. The oscillator section consists of a series-fed Hartley; for the 11 mc to 31 mc band, a plate tickler circuit is employed. The oscillator tunes at a higher frequency (455 kc higher) on all bands except the 11-31 mc range.

A 6BA6 is used for each of the i.f. stages.

An R.F. GAIN control is incorporated in the cathode circuit of the first i.f. The secondary winding of the 2nd i.f. transformer is employed as a tank circuit for a regenerative type Q-multiplier. Regeneration is controlled by a pot (SELECTIVITY) in the cathode circuit of the second i.f. stage. As more regeneration is introduced the "Q" increases and the receiver is thereby made more selective. The selectivity can be varied from 5 kc to 500 cps.

The output of the 2nd i.f. stage is fed to one diode portion of a 6T8 (triple-diode triode) which serves as an a.m. detector and furnishes the a.g.c. voltage. The a.g.c. is returned to the 1st i.f. (and converter *only* on the standard broadcast band). Audio output from the detector goes through the AUDIO GAIN control to the triode amplifier section of the 6T8. It is then coupled to the pentode half of a 6AW8 (pentode-triode) which acts as the power amplifier for the five-inch speaker. A front panel-

*6015 5th Ave., Brooklyn 20, N.Y.
†238-73 116 Rd., Elmont, N.Y.

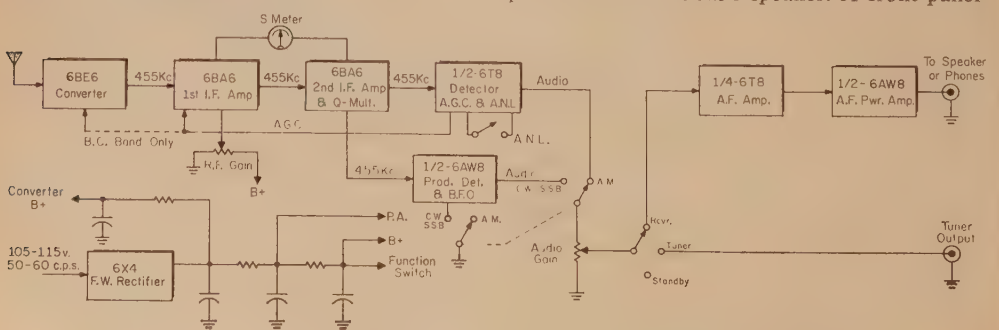


Fig. 1—Block Diagram of the NC-105 receiver.

Rear view of the NC-105. The jack to the right of the linecord is used for the "tuner" output. To the right of this, is the setting pot for the S-meter. Speaker is permanently mounted in the cabinet and is disconnected from the chassis by pin jacks.

mounted phone jack may be used for headset operation.

The triode portion of the 6AW8 is employed as a Hartley b.f.o. and as a product detector. Tuning of the shunt-fed Hartley b.f.o. circuit is accomplished by a slug-tuned coil (PITCH control). The input of the product detector is derived from the 2nd i.f. stage. The product detector is utilized for c.w. and s.s.b. operation; the diode detector is employed for a.m. reception.

Automatic noise limiting (ANL) is obtained from another diode portion of the 6T8, which is used in a series gated circuit. A front panel switch, ANL, turns the automatic noise limiting function ON or OFF.

The transformer operated power supply employs a 6X4 full-wave rectifier circuit. Filtering is accomplished by a 2-section R-C pi-filter and a separate filter is used for the converter stage (see fig. 1).

The S-meter circuit is an interesting one. Referring to fig. 2, the S-meter is connected between plate decoupling resistors R_1 and R_2 of the first and second i.f. stages, respectively. Because the a.g.c. voltage is applied to the 1st i.f., this changes the voltage drop across decoupling resistor R_1, and causes the S-meter to indicate relative signal strengths. Resistor R_1 is a rear-mounted screw driver adjusted pot which is also used for "setting" the meter.

The receiver may be used as a tuner for an external audio system, such as hi-fi, tape recorder, etc. For this operation, the FUNCTION control is set to TUNER position and the audio is obtained from a rear-mounted jack.

A.G.C. Action

This test was performed on the 80 meter band. Using a 400 cps, 30% modulated carrier, the input voltage to the receiver was varied by –80 db (from 100,000 μv to 10 μv). Variation in output voltage (measured across the speaker) was found to be –34 db. This performance is typical for this kind of receiver.

Receiver Operation

Considering the price range ($119.95), the performance of the NC-105 is quite satisfactory. Using a 15 foot length of wire tacked to the wall for the antenna, the receiver pulled in many commercial short-wave and amateur stations. The set is "peppy" and the Q-multiplier aids in reducing QRM. The instruction book contains approximate dial calibration charts which can be used with the 0-100 logging scale. Chassis construction and wiring of the NC-105 are neat. The cabinet styling, in blue-gray or walnut finish, should please most people.

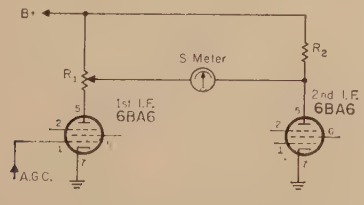


Fig. 2—Circuit of the S-meter as used in the NC-105.

As would be expected, a single conversion receiver (455 kc) with no r.f. stage allows images to get through at the higher frequencies. The NC-105 receiver is no exception. It was also noted that the power transformer ran very warm after a couple of hours of use.

When moderately strong signals were tuned in, the S-meter usually pinned itself. With the receiver set to "tuner" output, some audio feedthrough was heard in the receiver's speaker. This is deliberate and serves as a monitor.

To aid in troubleshooting, it would have been nice if a tube-pin voltage chart were included in the otherwise fine instruction manual. ■

TABLE I: NC-105 SPECIFICATIONS

Main Tuning Ranges .....550-1600 kc (Broadcast Band), 1.6-4.5 mc, 4.0-12.0 mc, 11.0-31.0 mc.
Bandspread .....0-100 logging scale. Calibration charts included in manual.
Circuit .....6 tube (including rectifier) single-conversion superhet. I.f. = 455 kc.
Antenna Input .....50-300 ohms, unbal.
Q-Multiplier .....ON: 5 kc to 500 c.p.s., OFF: 7 kc.
S-Meter .....Calibrated to S-9 and in db above 9. Operates on all modes (a.m., c.w., s.s.b.).
Noise Limiter .....Automatic, in series gated circuit. Can be turned off.
Detector .....For a.m.: diode; for c.w. & s.s.b.: product detector.
Audio .....5-inch, 3.2 ohms built-in speaker. Output available for phones or external speaker. Tuner output available.
Power Requirements .....49 watts, 105-125 volts, 50-60 c.p.s.
Dimensions .....7⅝ high × 13½ wide × 8⅝ deep. (Shipping weight = 32 lbs.)
Price .....$119.95 in blue-gray metal cabinet. $139.95 in walnut cabinet (Model No. NC-105W).

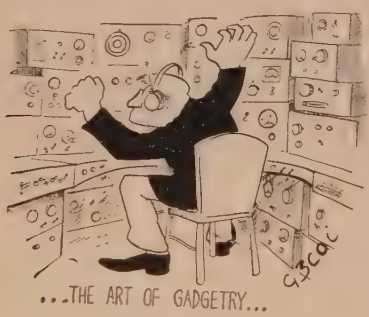
Evolution Of The Simplest Rig

BY LARRY DART*, W6RTE

By the year 1965, the state of ham radio had reached certain limits which demanded drastic revisions in equipment and operating procedures. These limitations called for the development of simpler transmitters and receivers, for one thing. Most hams had been unable to confine the hamshack to one room, and many families were forced to purchase another home for living quarters.

This growth in size of the hamshack was not due to larger transmitting and receiving equipment. On the contrary, the development of the transistor had enabled the manufacturer and home builder alike to miniaturize gear to the point where the average receiver was no larger than a shoebox.

No, this spreading out of the hamshack—now known as "electronic dispersion"—was due purely and simply to the number of gadgets added to keep up with the ham down the street. Eventually, the art of gadgetry reached a higher state than the art of communication.



For example, there was the "YL filter" developed by Romeo McSnurd, WK19WOW. This simple little device sampled the audio frequencies pouring from the receiver, analyzed and compared them to taped standards, and if the logic system decided they were male voice frequencies, it turned the receiver off. This invention earned bouquets from the ham fraternity in general, but received some boos from the younger members whose voices hadn't quite settled down to *basso profundo*.

There was also the "CW blanketer" invented by Lady Tonsils-Chatterly, G12YAP. Lady Tonsils-Chatterly hated c.w. to the extent that she would not even work phone men who used the words "fine business", because that reminded her of the c.w. appreviation f.b.

Lady Tonsils-Chatterly, not being the type to sit around when faced with a problem, spent two and a half years working on the c.w. blanketer, and finally obtained a patent on it in March of 1967. This device worked on the principle discovered earlier that year by a freshman at the University of California, namely that +1 added to −1 equals 0. This formula was then used by Lady Tonsils-Chatterly to work out her now famous Theory of Negative Power Cancellation, which led directly to the c.w. blanketer.

This amazing device sensed the first cycle of r.f. as soon as the key was closed, and immediately radiated a ten-megawatt signal 180 degrees out of phase with the offending CW station, and on the exact same frequency. This effectively cancelled out the c.w. interference on Lady Tonsils-Chatterly's QSO's, but it also cancelled out Lady Tonsils-Chatterly, who finally went back to s.w.l.ing.

Probably the most fiendishly clever gadget ever invented, though, was the "whirling rhombic." It was certainly the largest. Elmer Q. Loot, WK19OIL—a Texas millionaire who dabbled in ham radio and had five private satellite balloons in orbit—built a circular track 2,000 feet in diameter in a corner of his back yard. Upon this track was mounted a framework carrying the world's largest rhombic antenna. The gain of this super-rhombic was terrific, although the beam-width was naturally quite narrow.

This is where the genius of WK19OIL came to the fore. The entire rhombic was rotated at a speed of 500 r.p.m., this being calculated as sufficiently fast to present a stable signal to the a.v.c. system of any receiver then in use.

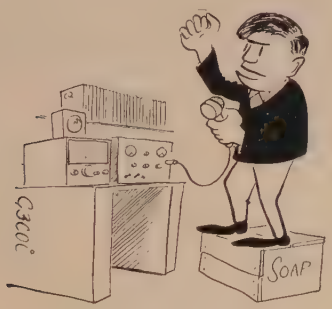
Inasmuch as slip joints for the feeders kept melting from the friction, and induction feed was not practical, it was necessary to mount the shack in the base of the framework and use

*3180 Todd Way, San José 24, Calif.

direct feed. WK19OIL had a little difficulty in adjusting to the motion at first, but with the aid of an operating chair built from a surplus Air Force centrifuge, he managed to work much DX with his greatly increased signal.

Unfortunately, about two a.m. on the morning of February 12, 1968, Loot sleepily hit the speed control instead of the transmit switch, and when last seen was in orbit slightly ahead of his five balloons. For some reason, despite its high gain, the whirling rhombic never again held much interest for the ham world.

Suddenly, in August of 1968, a bombshell was dropped into amateur radio. An article by Abraham Lincoln Smith, WK13JRK, was published in *CQ*, an amateur radio periodical of that era. In this article, Smith decried the cancerous growth of gadgetry. "The little black box has spread throughout the land, and pandemonium reigns triumphant in the hamshack," he wrote, in his usual brilliant style. He called for a return to sanity and simplicity. The response to this article was tremendous. *CQ* was forced to set up another publication merely to print the letters to the editor concerning Smith's plea.



...CALLED FOR A RETURN TO SANITY...

Surprisingly enough, it was found that only 36% of the letters disagreed with the ideas set forth, and 98% were in full support of Smith. (The editor who compiled the statistics was later replaced by an adding machine.) This heartfelt endorsement turned the tide. Hams all over the world, tired of the gadget race, began to gravitate to spot frequencies. Many found that what would have been only a casual contact in the old days turned out to be a lasting friendship. It was discovered that v.f.o.'s were not really needed, that many interesting conversations could be had without turning ten knobs and throwing twenty switches. Tunable receivers went next, as more and more hams found others with mutual interests in their own towns, and never tuned off the local ragchew frequency.

This revolution snowballed during the next two years. In the interests of economy, stations were reverting to single-channel transceivers. A typical ham station no longer necessitated moving the family out. There was a return to the desk-top station.

[*Continued on page 90*]

Transmission Line Quiz

CARL C. DRUMMELER*, W5EHC

Up to snuff on your transmission lines? Try your hand at this quiz. Answers are on page 103. Scoring: 5-Excellent, 4-Good, 3-Fair, 2-Back to the books, 1-Tsk Tsk.

1. A transmission line of a given impedance is attached to the midpoint of a half wave doublet antenna. The v.s.w.r. on the transmission line will be affected by:

☐ A. The length of the transmission line.
☐ B. The feed point impedance of the antenna.
☐ C. The number of turns in the output link of the transmitter or the adjustment of the output coupling control.
☐ D. Placing a capacitor in parallel with the transmission line at the transmitter end.
☐ E. Placing a capacitor in series with one conductor of the transmission line at the transmitter end.

2. A transmission line of an exact electrical half wave in length is attached to the midpoint of a half wave doublet antenna. The impedance is perfectly matched at 3900 kc (the frequency at which each is a half wave), and the v.s.w.r. is unity. If the transmitter frequency is shifted to 3700 kc (no other change), will the v.s.w.r.

☐ A. Remain at unity?
☐ B. Increase?
☐ C. Decrease?

3. A certain antenna has a midpoint impedance of 72 ohms at 3500 kc. Measured at 7000 kc, its midpoint impedance would be:

☐ A. Less.
☐ B. The same.
☐ C. Greater.

4. A reasonably close impedance match may be had at 3900 kc by feeding a 9 foot center loaded (to resonance) whip antenna with a 52 ohm coax transmission line.

☐ A. True.
☐ B. False.

5. A transmitter equipped with a flexible pi-network antenna loading circuit is capable of 100 watts output into a 52 ohm resistive load. If coupled to a transmission line with a v.s.w.r. such that its feed point impedance is 60 ohms resistive and 44 ohms reactive, it cannot "be made to take a load" so as to give 100 watts output.

☐ A. True.
☐ B. False.

*5824 N. W. 58th St., Oklahoma City 22, Oklahoma

Rules: 1962 *CQ* World Wide DX Contest

Oct. 27-28, Nov. 24-25, 1962

I. CONTEST PERIOD

PHONE SECTION: 0000 GMT, Saturday, October 27th to 2400 GMT, Sunday, October 28, 1962.
C. W. SECTION: 0000 GMT, Saturday, November 24th to 2400 GMT, Sunday, November 25, 1962.

II. BANDS

Contest activity will be in the 1.8, 3.5, 7.0, 14.0, 21.0, and 28.0 mc amateur bands.

III. TYPE of COMPETITION

1. PHONE SECTION:
   (a) Single Operator.
   (b) Multi-Operator, single transmitter.
   (c) Multi-Operator, multi-transmitter.
2. C.W. SECTION:
   (a) Single Operator.
   (b) Multi-Operator, single transmitter.
   (c) Multi-Operator, multi-transmitter.
3. INTER-CLUB DX Clubs affiliated to a National body.

IV. EQUIPMENT

There is no limit to the number of transmitters and receivers allowed, and competitors may use the maximum power permitted under the terms of their license.

V. SERIAL NUMBERS

1. Phone stations will exchange serial numbers consisting of 4 numerals, the first two being the RS report and the last two their own Zone number.

2. C.w. stations will exchange serial numbers consisting of 5 numerals, the first three being the RST report and the last two their own Zone number.

3. Stations in Zones 1 through 9 will prefix their Zone number with Zero. (01, etc.)

VI. POINTS

1. Contacts between stations on *different* continents will count three (3) points.

2. Contacts between stations on the *same* continent but *not* in the same country, will count one (1) point.

3. *Exception:* Contacts between stations in the North American continent will count two (2) points.

4. Contacts between stations in the *same* country will be permitted for the purpose of obtaining a Zone and/or Country multiplier but *no* QSO points will be credited.

5. Only one contact per band with the same station, will be permitted.

VII. MULTIPLIER

Two types of multipliers will be used.

1. Multiplier of one (1) for each Zone contacted on each band.

2. Multiplier of one (1) for each Country worked on each band.

VIII. SCORING

1. The score of *each* single band will be the *sum* of the Zone and Country multiplier for that band, *multiplied* by the total contact points on that band.

2. The total all band score will be the *sum* of Zone and Country multipliers of all bands, *multiplied* by the sum of the contact points on all bands.

3. Those sending in logs for a single band will be eligible for a single band award only. If a log is sent in for more than one band, indicate which band is to be judged, *otherwise it will be judged as an all band entry.*

4. A station will not be eligible for more than one award.

5. Single operator contestant must show a *minimum* of 12 hours of operating time to be eligible for an award. If a contestant operates on more than one band and wishes to be judged for a specific single band, he must show a *minimum* of 12 hours on that band.

6. *Exception:* Contestants using the 21 *or* 28 mc bands will be required to show a *minimum* of only 8 hours.

7. Multi-operator stations must show a minimum of 24 hours of operating time to be eligible for an award.

8. Multi-operator stations will *only* be judged on the basis of an all band score.

IX. ZONES and COUNTRIES

The *CQ* Zone map and the ARRL and WAE country lists will be used as standards. The continental boundaries used for WAC will also be recognized. Should any question arise as to the positive location of a station the official definition will be final.

X. AWARDS

Certificates will be awarded for each section of the Contest as follows:

1. To the highest scoring single operator station on each single band in the following areas:
   (a) Each call area of the United States, Canada and Australia.
   (b) All other countries.

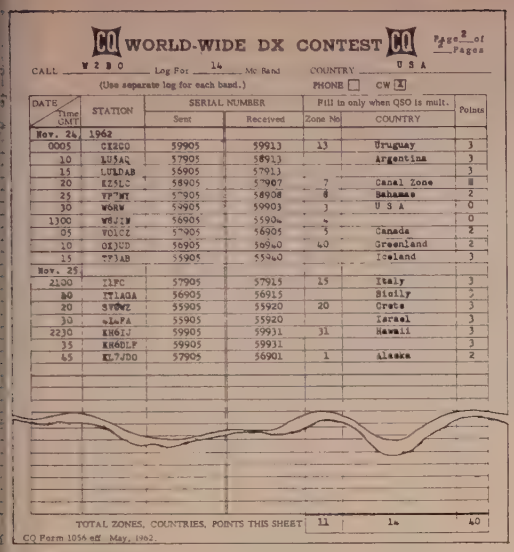
2. To the station having the highest all band score (more than one band) in the following areas:
   (a) Each call area of the United States; Canada and Australia.
   (b) All other countries.

3. Awards to multi-operator stations will only be made as in §2 above.

XI. SPECIAL AWARDS

In addition, the following special awards will be made:

1. A cup will be awarded to the highest scoring



CQ WORLD-WIDE DX CONTEST CQ

Page 2 of Pages

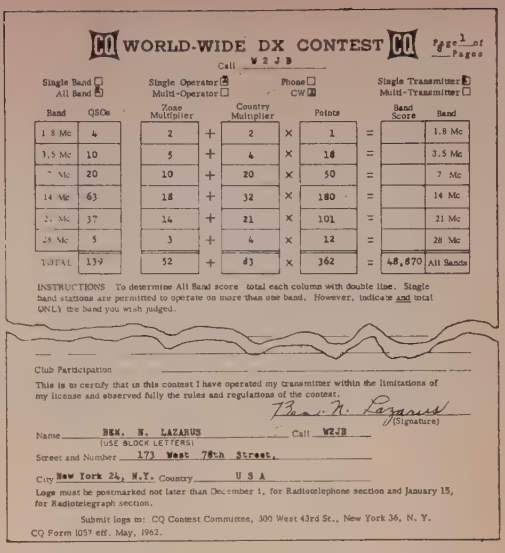
CALL W2BO Log For 14 Mc Band COUNTRY U S A

(Use separate log for each band.) PHONE ☐ CW ☒

DATE / Time GMT	STATION	SERIAL NUMBER Sent	Received	Fill in only when QSO is mult. Zone No.	COUNTRY	Points
Nov. 24	1962					
0005	CX2CO	59905	59913	13	Uruguay	3
10	LU5AQ	57905	58913		Argentina	3
15	LU1DAB	55905	57913			3
20	KZ5LC	58905	57907	7	Canal Zone	3
25	VP7MI	57905	58908	8	Bahamas	2
30	W0RW	59905	59903	3	U S A	0
1300	W0JIW	56905	55904	4		0
05	VO1CZ	57905	56905	5	Canada	2
10	OX3UD	56905	56940	40	Greenland	2
15	TF3AB	55905	55940		Iceland	3
Nov. 25						
2100	I1FC	57905	57915	15	Italy	3
20	IT1AGA	56905	56915		Sicily	2
20	SV5WZ	55905	55920	20	Crete	3
30	4X4FA	55905	55920		Israel	3
2230	KH6IJ	59905	59931	31	Hawaii	3
35	KH6BLP	59905	59931			3
45	KL7JDO	57905	56901	1	Alaska	2

TOTAL ZONES, COUNTRIES, POINTS THIS SHEET 11 14 40

CQ Form 1056 eff. May, 1962.



CQ WORLD-WIDE DX CONTEST CQ

Page 1 of Pages

Call W2JB

Single Band ☐ All Band ☒ Single Operator ☒ Multi-Operator ☐ Phone ☐ CW ☒ Single Transmitter ☒ Multi-Transmitter ☐

Band	QSOs	Zone Multiplier		Country Multiplier		Points		Band Score	Band
1.8 Mc	4	2	+	2	×	1	=		1.8 Mc
3.5 Mc	10	5	+	4	×	18	=		3.5 Mc
7 Mc	20	10	+	20	×	50	=		7 Mc
14 Mc	63	18	+	32	×	180	=		14 Mc
21 Mc	37	14	+	21	×	101	=		21 Mc
28 Mc	5	3	+	4	×	12	=		28 Mc
TOTAL	139	52	+	83	×	362	=	48,870	All Bands

INSTRUCTIONS To determine All Band score total each column with double line. Single band stations are permitted to operate on more than one band. However, indicate and total ONLY the band you wish judged.

Club Participation

This is to certify that in this contest I have operated my transmitter within the limitations of my license and observed fully the rules and regulations of the contest.

Bea. N. Lazarus (Signature)

Name BEN. N. LAZARUS (USE BLOCK LETTERS) Call W2JB

Street and Number 173 West 78th Street.

City New York 24, N.Y. Country U S A

Logs must be postmarked not later than December 1, for Radiotelephone section and January 15, for Radiotelegraph section.

Submit logs to: CQ Contest Committee, 300 West 43rd St., New York 36, N. Y.

CQ Form 1057 eff. May, 1962.

Here is a sample of the official World-Wide DX log form and application blank. See Section XIII for Instructions.

single operator on a single band, phone station in the world. *(Donated by K2IEG)*

2. A cup will be awarded to the highest scoring single operator on a single band, c.w. station in the world. *(Donated by W7KVU)*

3. A cup will be awarded to the highest scoring single operator, all band, phone station in the world. *(Donated by W2SKE)*

4. A cup will be awarded to the highest scoring single operator, all band, c.w. station in the world. *(Donated by W9IOP)*

5. A cup will be awarded to the highest scoring multi-operator, single transmitter phone station in the world. *(Donated by K2AAA)*

6. A cup will be awarded to the highest scoring multi-operator, single transmitter, c.w. station in the world. *(Donated by W3AOH)*

7. A cup will be awarded to the highest scoring multi-operator, multi-transmitter, phone station in the world. *(Donated by W6AM)*

8. A cup will be awarded to the highest scoring multi-operator, multi-transmitter, c.w. station in the world. *(Donated by K2GL)*

9. A plaque will be awarded to the affiliated DX Club (not a national body) submitting the highest aggregate score of the scores submitted by its members. *(Donated by* CQ)

(a) For a club to enter, an officer of the club must submit a list of its participating members and their scores.

(b) This list may include scores of single operator and multi-operator stations; both phone and c.w.

(c) Stations that are members of a competing club therefore must indicate this fact on their report forms.

10. At the request of the donors, previous winners of a Trophy will again be eligible after a three year period. There are no restrictions to the winning of the *CQ* Plaque.

11. In countries or sections where the returns justify, second and third place certificates will be awarded. Also, such special and/or additional awards will be made as the Contest Committee shall choose.

XII. DISQUALIFICATION

Violation of the rules and regulations pertaining to amateur radio in the country of the contestant, or the rules of this contest, or unsportsmanship conduct, will be deemed sufficient cause for disqualification.

XIII. LOG INSTRUCTIONS

1. In keeping a log, fill in Zone number and Country, only the *FIRST TIME* it is contacted.

2. Use a separate sheet for each band and a tally sheet or report form.

3. Keep all times in *GMT*.

4. All contestants are expected to compute their scores. Logs should be checked for contact duplications and proper point credit before they are submitted.

5. Make sure name and address is clearly noted on each log. PRINT or TYPE.

6. Each contestant must sign a pledge that all rules and regulations have been observed and that the report is a true one. Note sample Contest report form.

7. If official forms are not available, use a duplicate form as indicated. The size is 8½" × 11" with 40 contacts to the page.

8. Copies of the Zone map, log sheets and report forms are available from *CQ*, address listed below. Send a self-addressed envelope large size; include sufficient postage. In the case of overseas stations, IRC coupons are acceptable. Indicate quantity of sheets required.

XIV. RULE CHANGES

1. Starting and ending time has been advanced 2 hours. This for the benefit of overseas operators. (Sec. I)

2. Point value of contacts between North American stations has been *increased* to 2 points. This change is being made in an effort to stimulate activity in Central America and the Caribbean areas. (Sec. VI, §3).

3. Reduce minimum operating requirements on 21 and 28 mc to 8 hours. (Sec. VIII, §6).

4. Make the same Trophy available to previous winners after an elapse of 3 years. (Sec. XI, §10).

XV. DEADLINE

All logs must be postmarked NO LATER than December 1, 1962 for the phone section and January 15, 1963 for the c.w. section. In rare isolated places the deadline will be made more flexible. Send logs directly to:

CQ
300 West 43rd St.,
New York 36, N.Y.
Att: Contest Committee
(Indicate Phone or C.W. Section)

(Please circulate this information to your DX friends and radio club.)

General Coverage For The 75A-4

BY FRED BENKLEY, JR.*, W1OHJ

The crystal controlled converter described here makes the Collins 75A-4 a general coverage receiver without loss of its excellent frequency stability and calibration accuracy. Coverage from 5 to 19 mc is provided and other frequencies may be added as desired.

If you are the happy owner of a 75A-4 and interested in listening to the international short wave frequencies, this crystal-controlled converter is for you. The same general statements made here also apply to other commercial receivers, allowing of course for different crystal conversions.

A somewhat unusual aspect of this converter is that it converts higher in frequency rather than lower as do most converters. This approach is taken in order to take advantage of the full 2 mc range offered by the A-4, from 28 to 30 mc. Each band on the converter, therefore, provides a 2 mc coverage as shown in Table 1. Each band tunes in the same direction and the original 75A-4 calibration remains intact.

Circuit

A twelve-position six deck switch, is used to provide for the addition of two crystals thus providing two more two-megacycle segments, as desired by the constructor.

Figure 1 shows the circuit details. Switch position 1 cuts the converter out, thus putting the 75A-4 in its normal state. Although this OUT switch position necessitated an extra switch wafer, it was considered a must.

The band switch was custom assembled using a Centralab PA-302 shaft and index assembly and six Centralab PA-1 steatite sections.

A separate 365 mmf tuning capacitor was used for input b.c. tuning because a large capacity and a larger tuning ratio are needed as compared to the higher frequencies. The smaller tuning capacitor remains in the circuit at all times for simplicity.

The input circuits utilize miniature fixed inductors hooked in the manner of a tapped coil for antenna matching purposes. The values were chosen to provide an approximate voltage step-up of 10:1 (100:1 impedance ratio). Some variations from this ratio were occasioned by components on hand.

The plate of the 6AK5 r.f. amplifier is fixed-tuned with broadbanding provided by the shunt 4700 ohm load resistor across the tuned circuits. The b.c. band interstage circuit is untuned as a matter of convenience. This leads to some cross modulation from a local 50 kw b.c. station (WNAC) 3.8 miles away—*unless* the r.f. gain is backed off. However, adjacent channel station CBF (690 kc) was readable with signals some 50 db weaker using the 6 kc filter in the 75A-4 and reduced converter gain.

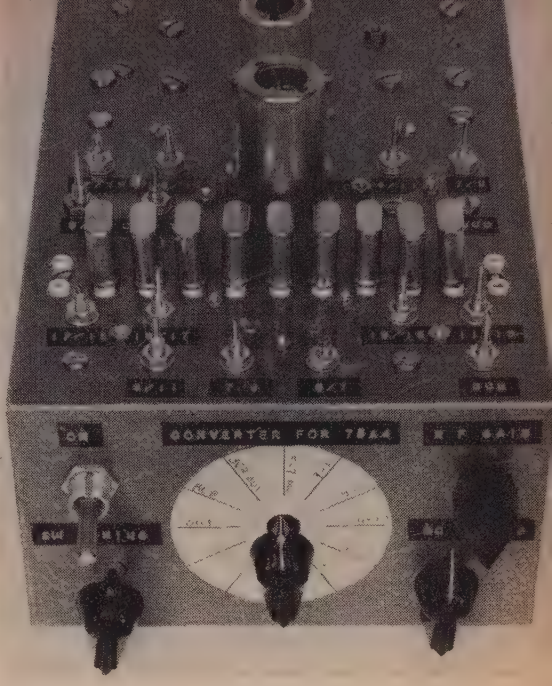
Crystals

The local oscillator utilizes third-overtone crystals for all bands. This necessitates separate plate-tuned circuits for each converter band. The circuit used maintains low drive as recommended for crystals of this type. The main precaution to be taken in getting the circuit in operation is to make sure that the tank circuit is tuned *above* the crystal frequency. Otherwise the circuit will not oscillate. The tuning range of the oscillator tank for each band can readily be checked with a grid dip meter with the crystal removed.

TABLE I

Switch Position	*Converter Freq. Range (Mc)*	*Crystal (Mc)*	
1	*Converter out*		
2	*Broadcast*	Y_1	28
3	*Broadcast Aux. (See Text)*	Y_1	28
4	5.0- 7.0	Y_2	23
5	7.0- 9.0	Y_3	21
6	9.0-11.0	Y_4	19
7	11.0-13.0	Y_5	17
8	13.0-15.0	Y_6	15
9	15.0-17.0	Y_7	13
10	17.0-19.0	Y_8	11
11	Spare		
12	Spare		

*35 Whipple Road, Lexington 73, Mass.



Front view of the converter for the 75A-4 showing control locations. Upper left is the on-off switch and upper right is the R.F. Gain. The bottom row, from l. to r.: S. W. Tuning; Bandswitch; Broadcast Tuning. The 12AT7 is located behind the crystals and the two spare crystal sockets may be seen on each end.

The crystals used are International Crystal Mfg. Co., type FA-5 with a rated tolerance of ± .01%. In the case of the highest frequency oscillator (28 mc for the broadcast band), this can lead to 2.8 kc calibration error. More accurate crystals are available from the same source. However, the error can be easily calibrated out using the ZERO SET on the 75A-4 and any station of known frequency as reference.

Operation

The auxiliary input, J_4 provides a convenient connection for an externally-tuned loop antenna for broadcast use in position 3. Alternatively, band switch position 3 can be used for a third additional 2 mc h.f. band segment in addition to available positions 11 and 12.

One characteristic of the converter that should be mentioned is the existence of spurious responses when tuning desired signals in the range of 14 to 15 mc. An example will explain the mechanism of the undesired responses. If the converter is used to tune in a signal at, say, 14.5 mc, the 75A-4 is tuned to 29.5 mc since a 15 mc oscillator is used for this band. But a strong signal on 14.75 will be received at the same time due to its being doubled in the mixer (14.75 × 2 = 29.5).

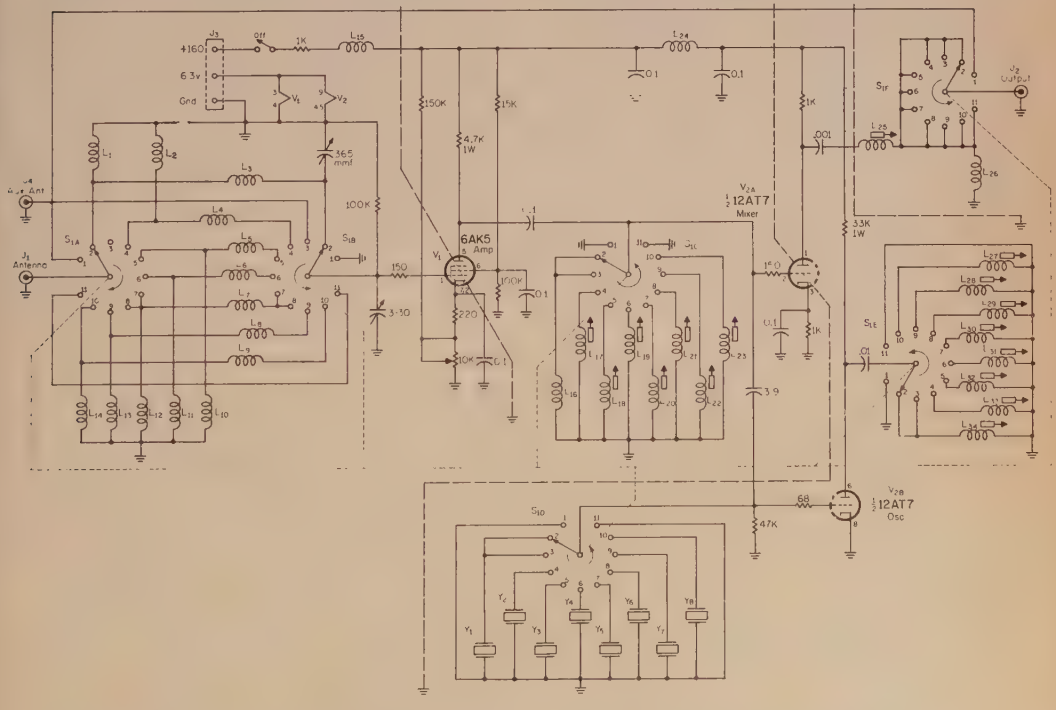
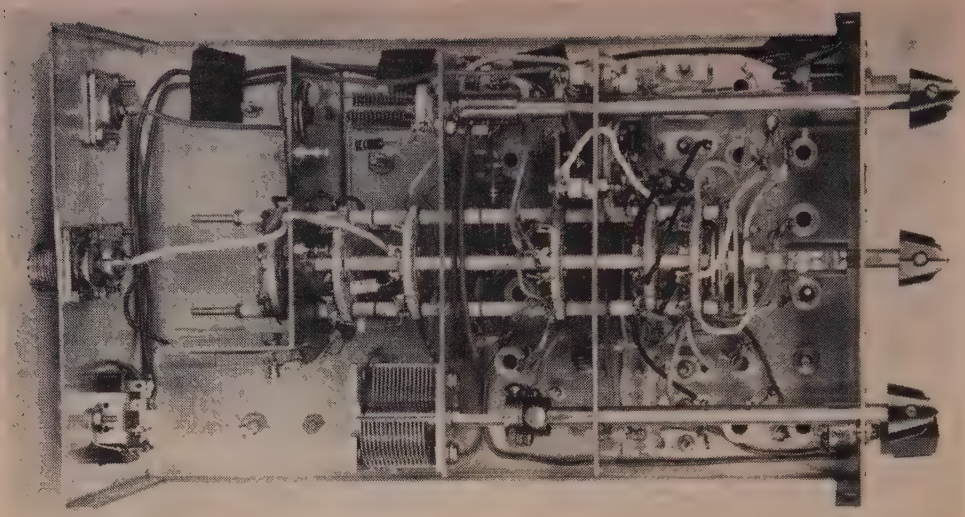


Fig. 1—Circuit of a converter that will enable the 75A-4 to provide continuous coverage from the broadcast band to 19 mc. The circuit includes two spare positions. The fixed inductors are all Wee-Ductors manufactured by Essex Electronics, a Division of Nytronics, 550 Springfield Ave., Berkeley Heights, New Jersey.



Bottom view of the converter for the Collins 75A-4 shows the construction of the bandswitch and shielded compartments. The shields are placed so that they intersect the tube sockets. The extreme left shield helps reduce feedthrough on 10 meters.

Fortunately, signals in the range 14 to 15 mc can be received directly by the receiver alone. Thus the converter should not normally be used for this range.

Some spurious signals can also be received in the ranges 13 to 14 mc and 15 to 16 mc. For example, when receiving 15.25 with the 75A-4 tuned to 28.5 second harmonics of a strong signal at 14.125 can be received. However, since the undesired signal is more than a megacycle off frequency the shortwave tuning control can be peaked on the desired signal thus discriminating against the undesired signal. Proper tuning of the interstage coil L_{22} will also aid in rejection of the off frequency spurious signals.

Total current drain of the converter at maximum gain is 15 ma at 160 volts. Power is taken from the 75A-4 by "tack" soldering leads to appropriate points available inside the receiver.

Construction

The general features of the layout are visible in the photographs. Isolation between stages is provided by partitions across the chassis over each tube socket. Similarly a shield between bandswitch sections S_{1F} and S_{1A}, which are adjacent at the rear, was used to reduce feedthrough of 10 meter signals. The chassis utilized was a grey Bud Minibox 10 × 6 × 3½. It is suggested that the bandswitch and shields be assembled prior to chassis drilling as a check on the layout and switch assembly. The ceramic wafers are somewhat fragile and caution should be exercised to avoid their breakage, especially after wiring is well advanced. Replacement of wafers becomes involved in the advanced stages of assembly.

The addition of this converter makes available the same stability, selectivity, calibration and bandspread for general coverage that the 75A-4 alone gives for hamband use. A second receiver is no longer needed. ■

COIL TABLE

	Induct. (uhy)	No. of Turns	Wire Size		Induct. (uhy)	No. of Turns	Wire Size
L_{17}	40.0	64	36	L_{27}	13.0	49	34
L_{18}	22.0	48	34	L_{28}	9.0	42	34
L_{19}	15.0	45	36	L_{29}	7.0	31	34
L_{20}	10.0	41	34	L_{30}	5.2	31	34
L_{21}	7.5	32	36	L_{31}	4.2	26	34
L_{22}	6.0	26	34	L_{32}	3.5	22	34
L_{23}	4.9	22	34	L_{33}	2.9	21	34
L_{25}	2.0	21	34	L_{34}	2.0	17	34

Coil Table—All inductors are close wound on CTC type LS-6 coil forms.

"At the moment we're running 40 point . . . er . . . 2685 watts, approximately, of course . . ."

DX DX DX DX DX DX DX DX

URBAN LE JEUNE, JR., W2DEC
BOX 35, HAZLET, NEW JERSEY

The following certificates were issued between the period June 3rd, 1962 and July 3rd, 1962:—

CW-PHONE WAZ

1690	G3HDA	Michael E. Bazley
1691	OZ5JT	Jens E. Thomsen
1692	K6BHM	Louis J. Haake
1693	DL3TJ	Gunter Halabuer
1694	DL1HA	Walter J. Kohl
1695	K6HOR	Robert N. Palmer
1696	VP2APK	Dietmar Kiesewetter
1697	G2AGR	William A. Rice
1698	KA2AB	Vernon J. Smith
1699	KR6LJ	Frank A. Jerome
1700	K8DYX	David F. Kaiser
1701	ZE8JJ	Wells Buxton
1702	JA1BNK	Jiro Aaizawa
1703	VK4TY	Norman R. W. Tyas
1704	VK5RX	G. W. Luxon

ALL-PHONE WAZ

153	W3NKM	Stanley S. Springer
154	W6WWQ	Bill Mauzey
155	K6RWO	W. E. Leeder
156	W2UZF	Jesse G. Sadler
157	PY2JU	J. J. Roos
158	K6VVA	Rick Hilding
159	W3AYD	Michael Solomon
160	WØBFB	John R. Hinegardner

ALL TWO-WAY SSB WAZ

102	W6WWQ	Bill Mauzey
103	OH2NB	Armas Valste
104	UA3CG	Nina V. Kaloshina
105	W1BAN	Charles T. Parham
106	K6VVA	Rick Hilding

CW WPX

332	SM3BEI	Lennart Norberg
333	K2HIY	Walter Gezari
334	G3FPK	Norman A. S. Fitch
335	DL6MK	Edgar H. Schnell
336	K2PKT	Harold A. Jamieson
337	W4YMG	Quentin Cassen
338	G3LPS	Eric Pickering
339	W9IRH	John Gohndrone
340	LA5HE	Ragnar Otterstad
341	W7VIU	C. A. Rhines
342	G3JUL	G. C. Voller

PHONE WPX

71	W2HUG	Geo. H. H. Garrison, M.D.
72	G3FKM	John Allaway

SSB WPX

104	W3NKM	Stanley S. Springer
105	G3FKM	John Allaway

MIXED WPX

34	W3KDP	Reynolds W. Collins
35	K4BAI	John T. Laney, III
36	LA5HE	Ragnar Otterstad
37	G3FKM	John Allaway

Note: At press time, the compilation of WPX Endorsements was not yet available. The complete revised endorsements chart will appear next month.

IN THE past I have always avoided, whenever possible, discussions concerning the ARRL and/or DXCC policies. *CQ* has in the past, and I might add not unjustifiably, been accused of being anti ARRL. Its present policies, which I might add include my own feelings, are very much pro ARRL. However, as DXers, I feel that we are at the short end of the stick by the organization which is "of, by and for the amateur." The so-called DX Committee which is domiciled in West Hartford has made decisions without any consultation of the DX Fraternity which are at many times at complete odds with the general feelings of the DX Fraternity. I say "So-called DX Committee" because all of its members are full time employees of the ARRL and many are not even so much as DXCC members. A decision was recently handed down which is contrary to the thinking of the DX Fraternity and concerns phone DXCC credit. Phone DXCC credit is no longer being given for stations operating on phone below 14.1 mcs. Where this Committee got the audacity to hand down such a decision is completely and totally beyond my comprehension. In many countries there are no such things as phone sub-bands and the amateur is *legally* entitled by his licensing authority to operate on phone in any portion of the band he chooses. In the past, most phone stations have operated above 14.1 mc as a matter of gentleman's agreement. This decision was obviously provoked by WØMLY during his African DXpedition. Dick was operating on s.s.b. on 14.001. He was legally en-

WAZ and WPX

THE WAZ and WPX certificates are awarded by the *CQ* DX department. WAZ is issued for proof of contact with the 40 Zones of the world as shown on the official WAZ Zone Map. WAZ is issued in three classes, *i.e.* Any mode, all phone and all s.s.b. For complete rules, see the January, 1962 *CQ*, page 50.

WPX is issued in four classes, *i.e.*, all c.w., all phone, all s.s.b. and Mixed. The number of prefixes required are: C.w.-300; Phone-300; s.s.b.-200; Mixed-400. For complete rules, see January, 1962 *CQ*, page 52. WAZ applications, Zone Maps and WPX applications may be obtained from the DX Editor at the address shown at the head of this column. Please send a self-addressed, stamped envelope or a self-addressed envelope and an IRC. All applications should be sent directly to the DX Editor.

WPX HONOR ROLL

CW WPX

W2HMJ	651
W5KC	556
W8KPL	553
K6CQM	552
W2EQS	547
W9YSX	544
W4OPM	531
W6KG	528
W2HO	526
K9EAB	515
W1IJB	513
W6WO	511
W2GT	510
SM7MS	510
W8LY	506
K2UKQ	505
G3EYN	503
W2NUT	502
W5LGG	502
W6YY	502
K2CPR	501
W9SFR	501
W1EQ	500
W2MUM	495
SM5CCE	488
YU1AG	482
W8PQQ	481
W9UXO	480
W4HYW	478
G2GM	478
W9GFF	471
W3OCU	466
K6SXA	464
K2ZKU	461
W3BCY	457
W4BYU	456
PAØLOU	451
W3PGB	450
DL1YA	450
W8JIN	449
W8RQ	445
OE1FF	442
W3BQA	437
W8UMR	429
K5LIA	428
OK1MB	428
W3CGS	426
W1EIO	425
SM5WI	425
WØPGI	420
HB9TT	419
OK3EA	419
W8IBX	416
WØMCX	416
W5AWT	412
W5DA	412
K5LZO	411
W2PTD	411
W4DKP	410
W1CKU	408
K4JVE	407
W5AFX	407
W2KIR	405
W4YWX	404
DL3RK	403
JA2JW	403
VE6VK	403
G3HIW	402
PY4OD	402
K2PFC	401
IT1TAI	401
W2RA	400
VK3KB	400

PHONE WPX

W8WT	548
G3DO	538
W9WHM	510
CT1PK	483
W9YSQ	471
MP4BBW	454
PAØHBO	453
W6YY	448
VK6RU	421
PZ1AX	413
G8KS	408
OE1FF	382
TG9AD	381
DL6VM	376
PAØSNG	369
W1UOP	368
K9EAB	366
W8UMR	363
SM3EP	361
W5ERY	358
W8JIN	356
W9UZC	356
DL3TJ	354
PY2CK	354
5A5TO	353
LA5HE	351

SSB WPX

W4OPM	400
MP4BBW	392
TI2HP	356
K9EAB	350
PZ1AX	345
G8KS	341
W3MAC	329
W2VCZ	320
W8PQQ	315
HB9TL	315
G3DO	311
K4PUS	305
W2HXG	294
W6YMV	278
K2MGE	273
WØCVU	271
K2TDI	264
DJ3CP	260
W2YBO	257
W3VSU	256
UR2AR	255
TG9AD	252
W1ORV	250
G3NUG	250

MIXED WPX

W8JIN	605
W4OPM	595
W3OCU	588
G3DO	568
W8WT	568
W8UMR	500

titled to do so in all the countries from which he operated. Dick is connected with the Yasme Foundation, the ARRL's attitude toward the Yasme Foundation has been and still is very cold. This, they probably felt, was their way of swinging the big axe.

I certainly would not like to see general phone operation in the area from 14 to 14.1 mc, but this has never really been a problem except for a few isolated Central and South American stations and there is no reason to assume that this would happen in the future. However, a DXpedition station has but one objective and that is to work as many stations as possible in a given period of time and if this can best be accomplished by operating phone below 14,100, the DX Fraternity is gaining not losing by this act, and the ARRL is obviously at odds with the best interests of the DX Fraternity.

The thing that makes this decision so obviously ridiculous is the fact that the ARRL has always recognized one-way contacts for DXCC purposes. That is to say that if you are on phone and working a station on c.w., you may still receive phone credit for this contact. Under this new directive, let us say you are working a DX station on c.w. on 14.050 mc and ask him to please listen for your phone whereby you promptly scoot up to the phone band and go on phone. If he remains on c.w. on that frequency you can receive phone credit, but if he goes on phone, making this two-way phone, you will not be able to receive phone DXCC credit. This directive will also become almost impossible to police. It will further be made a mockery because most of the foreign phone honor roll men, when working a new country on c.w. that is needed on phone will simply go on phone on their c.w. frequency. Presumably under this directive there will be nothing contrary to DXCC rulings provided the station they are working does not also go to phone.

Clay, while he was in the operating seat of XW8AS, was instrumental in giving many DXers a new country. His KWM-2 and dipole were successful in working all zones. Clay is now back home in Texas and may be reached via W5ZG, 4715 Crockett, Galveston, Texas.

I feel one serious problem may result from this foolish action taken by the "DX Committee." When the American phone band was extended an additional 50 kc, many DX phone stations were very unhappy with the ARRL as they considered them responsible for encroaching upon their territory, and I think it is very possible that many of these same stations will now begin phone operation in what was previously the c.w. portion of the band to show their malice toward the ARRL and I, for one, cannot honestly say I would blame them for doing this. We have precious few friends at international frequency allocation meetings and I do not think the League should jeopardize this position merely to show their contempt for a small scale (by their standard) operation.

If the League is truly going to be an organizatio that is "of, by and for the amateur" then let them put people on the DX Committee whose qualifications are simply a genuine interest in DX.

I would be very pleased to hear any opinions either pro or con on this matter.

What Is DX?

During this month, a letter was received from an obviously young reader. The request on the surface appeared to be simple enough and stated merely, "What is DX? I do not know, could you please tell me?" I cranked a piece of paper into the typewriter and proceeded. "Dear Johnny, Thank you very much for your letter and your interest in DX. To answer you question, DX is———." This is where the problem began. At this juncture, I realized that DX is many things to many people and there is no clear cut straight and simple answer to this question. Any type of answer appeared to be lacking. Now, all of you reading this column have some interest in DX, and I would like to call upon you for your assistance in answering this letter and to make it worth while for the best answer to the question of "What is DX" which is received this month, I will personally contribute a one-year subscription to your favorite ham magazine.

Here and There

G? Rockall Island: A DXpedition to Rockall Island is in the offing by G3JZK. This island is nearly 300 miles west of Scotland. (Tnx WGDXC.)

HS1 Siam: Mike, HS2M, has returned to the states leaving HS land without any activity. In 16 months he worked 158 countries in all zones. See QTH's for his present QTH.

I1 Italy: Someone has been bootlegging the call I1DFG on s.s.b. recently. The boys there have never been on s.s.b.

KP6 Christmas Island: George, W5HTM/KP6, and Paul, K5MAZ/KP6, both on Christmas Island were recently worked two way s.s.b. The use of the KP6 prefix for Christmas Island operation was authorized by the FCC.

PYØ St. Paul's Rocks: During the period of March and April a pirate station PYØDX worked by many Ws and QSLs arrived here for me. Sorry very much, but post office and

Johnny, PY2ON, in his shack in Brasilia, the new capital of Brasil. Johnny is very active on 20 meter s.s.b. and may be remembered for his operation as XU3AR in China. *(Tnx W4NJF)*

This young man is Lionel Etienne, of Petionville, Haiti. Lionel's 25 watt rig can be found on 20 meter c.w. quite frequently. *(Tnx K8TBR)*

LABRE do not know anything of PYØDX from St. Paul es St. Peter Rocks. Only possibility of new one in these Rocks is when Navy here gets trip and I would like to make this trip with PY1CK. The call may be PYØXA for Flavio and PYØXB for me. (From PY1HQ via NCDXC)

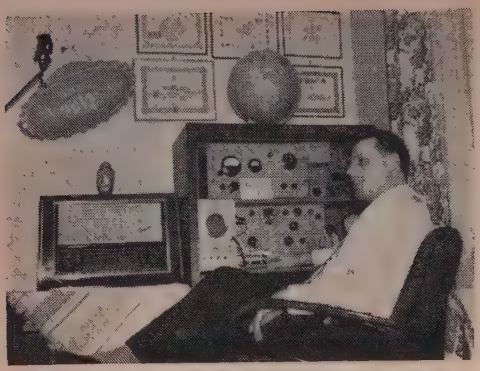
ST2 Sudan: Eric, ST2AR, has got the all-clear from the Sudan Government and is causing a few king-size pile ups. He says that he can have the choice of a new call sign if he wishes —6T2AR or 6U2AR. He favors the latter for c.w. purposes. On the subject of pile ups, Eric says that he doesn't go in for all this regimentation, he actually enjoys it. He says he can always clear his freq by calling someone 15 kc away. Eric states that he is the only ham in Sudan and no chances of any others for a while anyway. If it hadn't been for his 9 years residence there, he wouldn't have one either. (Tnx NCDXC)

VKØ Antarctica: Just received a letter from VKØVK. He will go to Antarctica again this fall. He will operate 1 kw both c.w. es s.s.b. on all bands plus 2.5 kw on 50 mc. He will be there to check v.h.f. scatter propogation in Antarctica. That is official dope. I expect to handle his cards again and will probably use special cards this time. He did not mention specific locates but as soon as I know his skeds, will advise. (W1AGS via NEDXC)

VR5 Tonga: VR5AA worked on 13999 kc es 14001 kc at 0745Z es 0830Z. His name is Herb and has a 4-wave rhombic on the US with 300 w. QSL to Box 36, Nukaalofa, Tonga Islands. He usually comes on around 0600 GMT. (Tnx NEDXC)

ZC5 British North Borneo: VS1DO, who made successful operation as ZC5DO is presently as VS5DO and he intends to be on as ZC5DO about the time you read this. All cards should be sent to Box 41, Singapore, Malaya. (Tnx *DXer*)

ZD8 Ascension Island: ZD8RN is presently active running 25 watts with a good signal in the States. Seems to operate mostly on 14022 and 14067 kc with the latter preferred. Operating hours seem to span 2200-0200 GMT. QSL c/o P.A.A. Box 4187, Ascension Island,



DL1HA in his very neat shack in Hamburg. Walter's rig runs about 60 watts to a windom type antenna. Walter is a recent recipient of the WAZ award.

via Patrick AFB, Florida. (Tnx WGDXC)

9U5 Rwanda and Burundi: Belgium's trust territory of Ruanda-Urundi became the two independent states of Rwanda and Burundi on 1 July.

Gus, W4BPD: Latest reports coming from Gus' trip indicate that the trip back from VQ9AA was a harrowing experience . . . seasickness amongst the crew members . . . waves 20-25 feet high with 25-45 knot winds . . . all eating out of cans and somewhat frightened. Breakers sometimes came over the boat . . . everybody was wet most of the trip . . . radio gear wet . . . long period of drying out. "There will never be another ham station on the air from Aldabra. Turtle steak was the main fare, even for breakfast. Also had wild goat, small lamb, *etc.*" He is having extreme difficulty in getting licenses for VQ8s. G2MI is working on it. However he has two VQ8s who will accompany him to operate from Chagos and Agalegas if license difficulties persist.

Gus is having trouble in getting transportation. Boat schedules are very tough there. Gus is in very close touch with REF for operations from Tromelin, Comores and Europa 5R8CM will accompany him on this part of the trip.

Gus and a VS9 will try to sneak into Yemen for 4W1 operations. Chances are very good. No definite time yet—probably in Sept. or Oct.

After Yemen, a possible try for VS9K, then to Iran-EP; Afghanistan-YA and Nepal-9N1, then to Calcutta. He has a letter from the King of Bhutan inviting him to operate from AC3 es AC5.

Gus has changed his low freq operating slightly; 0000Z-40 meter c.w.-7001, 0030Z-3502 c.w., 0100Z-7002 s.s.b. He said W/K piling thru on 40, but worked few. He wants pileups on 40 and 80 for something to do. He heard whole N. Carolina net on 40 but couldn't raise anyone. He has worked several W/K on 3.5.

A recap of the frequencies to be used by Gus for general operation are: C.W.-3535, 3565, 7001, 14035, 14065, 21035, 21065, 28035, 28065; S.S.B.-3765, 3995, 7001, 14125, 21235, 21435, 28235, 28635. (Tnx WGDXC, *Fla. DX Report*/NEDXC.)

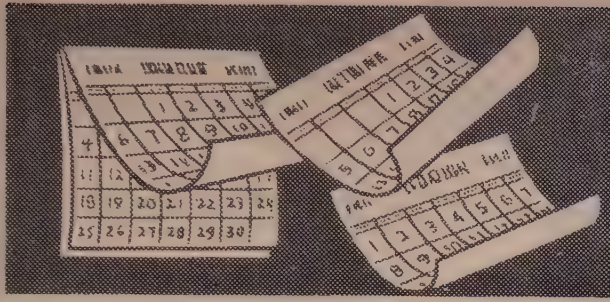
The World is Yours: This TV series on Hams and Ham operation is being developed by Don Cordray, WA6MSE, Van Nuys, California as a future TV series dealing with amateur radio. This should be of great interest to all hams as it will sell to the viewers the value and deeds accomplished by this most controversial and misunderstood hobby. It certainly will serve as a fine liaison between the hams and the misinformed public. Don has been a ham since 1926 and is recognized as one of the outstanding TV announcers/producers in the TV field.

QTHs and QSL Managers

AP5JA via AP5CP.
CN8EU via W6EDU.
CR8AB via W4QCW.
DL4/DL5 QSL Bureau (new) Signal Support Co. APO 403, N.Y., N.Y.
FK8AU via VK3AHO.
FW8BH via W4ANE.
HI3PC Box 282, Santo Domingo, Dominican Rep.
HL9KB via W3MVK.
HL9KN Bill Brister, APO 358, San Francisco, Cal.
ex **HS2M** Michael W. Pioso, 4110 Gallatin St. Hayattsville, Md.
JZ0ML via W2CTN.
KC6BK Page Comm. Engrs. Radio Club, Ponape, Eastern Caroline Is.
W6YCW/KJ6 APO 105. San Francisco, Calif.
WA6CJL/KP6 via W6AFI.
KX6DB Cy Baker, Box 96, Navy 824, San Francisco, Calif.
LX3KP via W2CTN.
PJ3AR via KØRDP.
PZ1BJ Box 32, Paramaribo, Surinam.
TA4RZ Box 132, Izmir, Turkey.
VK2VC/LH via W4ZRZ.
VK9BB Barry Bonser, RTS, RAF West Island, Cocos Keeling Group.
VK9DJ D. Jose Nauru, Central Pacific.
VP2AL via K4LRA.
VP2KJ via W4SSU.
VR5AA Box 36, Nukualofa, Tonga Island, S. Pacific.
YJ1RH via W4ANE.
ZD8RN via PAA, Box 4187, Ascension Island, c/o Patrick AFB, Fla.
3A2CZ via ON4QX.

9G1DP, Louis, requests that all W/K stations still needing a QSL for his 9G1DP, XT2Z or 5T5AH operations forward their QSL directly to Louis Kaiser, POB 1981, Kumasi, Ghana, West Africa. The return QSL will be forwarded via the Bureau, (no direct reply). Louis expects to return to Switzerland next year and is anxious to see that all QSL requests be cleared by January '63. QSLs for all non-W/K QSOs covering his XT2 and 5T5 activity will be distributed automatically through the appropriate Bureaus.

Larry, VP4NC, who is a regular contributor to this column, was kind enough to send along this picture of himself. Larry can be found almost daily on 15 or 20 meter a.m. phone.



CONTEST CALENDAR

FRANK ANZALONE, W1WY
14 Sherwood Road, Stamford, Conn.

ANTICIPATED CALENDAR of EVENTS

September	8- 9	PERUANO C.W.
September	8- 9	Ohio WW DX
September	15-16	PERUANO Phone
September	15-16	SAC C.W.
September	22-23	SAC Phone
September	29-30	MARC VE/W
October	6- 7	Oceania DX Phone
October	13-14	Oceania DX C.W.
October	13-15	ARRL CD C.W.
October	20-22	ARRL CD Phone
October	24-25	YLRL C.W. Party
October	27-28	CQ WW DX Phone
October	27-28	RSGB 7 mc Phone
November	3- 4	RSGB 7 mc C.W.
November	7- 8	YLRL Phone Party
November	10-11	ARRL SS
November	17-18	ARRL SS
November	24-25	CW WW DX C.W.
December	1- 2	RSGB 21/28 Phone
December	9th	OK DX C.W.

PERUANO

C.W.

Starts: 1200 EST Saturday, September 8th.
Ends: 2400 EST Sunday, September 9th.

Phone

Starts: 1200 EST Saturday, September 15th.
Ends: 2400 EST Sunday, September 16th.

This is a Panamerican contest sponsored by the Radio Club of Peru. Operation therefore is confined to stations in the American continents.

For multiplier purposes the Canal Zone and Panama will be counted as one country. Alaska will also count as a country.

Serial Nrs: Five and six figures consisting of the RS or RST report, plus a three figure self-assigned number for the first contact. However for each subsequent contact the three figures *sent* will be those *received* in the previous QSO. Therefore each serial number will almost always be different from the previous one.

Scoring: 1. One point per contact.

2. A multiplier of one for each country worked on each band.

3. A multiplier of one for each additional band used and confirmed by at least one contact.

4. The final score will be the total number of contact points multiplied by the sum of the two multipliers.

5. Your own country can be worked once per band for multiplier purposes, but it will have no contact point value.

6. Your log must contain at least one OA contact.

Awards: A medal and a certificate to the highest scoring station in each country and W/K and VE district. Second place stations wil' also receive a certificate.

Include a summary sheet with your log and make sure your name and address are in BLOCK letters. Sign the usual declaration and mail within 20 days to: The Radio Club PERUANO, Presidente de Comision Concursos, Casilla Postal 538, Lima, Peru.

Ohio DX

Starts: 1700 GMT Saturday, September 8th.
Ends: 2259 GMT Sunday, September 9th.

This one was fully covered in K6BX's column on page 86 last month.

It's a world-wide contest which gives CHCers an opportunity to gain the Cardinal "E" certificate given by the Ohio Amateur Radio Society, sponsors of the contest.

A better choice of dates would have been advisable since the PERUANO contest has been established on this week-end for some time.

Mailing deadline is September 30th and your logs go to the Contest Manager, Jack Siringer, W8AJW, 2972 Clague Road, North Olmsted, Ohio.

SAC

C.W.

Starts: 1500 GMT Saturday, September 15th.
Ends: 1800 GMT Sunday, September 16th.

Phone

Starts: 1500 GMT Saturday, September 22nd.
Ends: 1800 GMT Sunday, September 23rd.

The Experimenting Danish Radioamateurs

We have been blaming W6RW's lower contest scores to the decreasing sun spots the past few years. "It's not so," sez Rog, "it's a couple of DX hounds I have been using in our multi-operator set-up. They're not hep to contest technique. Oh! It's all legal, they wear their licenses around their necks."

are sponsoring this the 4th Scandinavian Activity Contest. (Each Scandinavian country takes turns in running this popular activity.)

It's the world working the following prefixes: LA, LA/p, OH, OHø, OX, OY, OZ and SM/SL; eight in all.

Complete details in last month's CALENDAR.

The mailing deadline is October 15th. Your logs go to the EDR Traffic Department, P.O. Box 335, Aalborg, Denmark.

OCEANIA DX

Phone

Starts: 1000 GMT Saturday, October 6th.
Ends: 1000 GMT Sunday, October 7th.

C.W.

Starts: 1000 GMT Saturday, October 13th.
Ends: 1000 GMT Sunday, October 14th.

This is the old and popular VK/ZL contest which has been made wider in scope this year. Basic changes are that overseas stations will now be permitted to contact stations in all other Oceania countries and awards will now be given for top scorers on individual bands.

Scoring: 1. For Oceania stations other than VK/ZL. Two points for each VK/ZL station worked, one point for stations in the rest of the world. 2. For stations outside of Oceania. Two points for each VK/ZL station worked, one point for contacts with Oceania stations other than VK/ZL.

Multiplier: The multiplier is determined by the sum of VK/ZL call areas worked on each band.

Final Score: Total points multiplied by the sum of VK/ZL call areas worked on all bands.

Serial Numbers: The usual progressive five and six figures, RS or RST report plus three figures commencing with 001.

Logs: (a) Must show in this order; date and time in GMT, station worked, band, serial number sent and received, each new VK/ZL call area worked and QSO points. Use a different log sheet for each band.

(b) A summary sheet to show; Call, name and address in BLOCK letters. Show sum of call areas worked per band, total QSO points, and your final score. Details of your equipment and other comments are also desired. Last but not least sign the usual declaration that all rules and regulations were observed.

Awards: Especially attractive colored pictorial certificates will be awarded to each country and call areas in W/K, JA, SM and UA.

1. Top scorer on all bands.
2. Top scorers on individual bands.
3. Those with minimum contact requirements to be determined by prevailing activity and conditions.

Listeners Section: To count for points, a VK or ZL station ONLY must be heard in a QSO and the following details noted. Date and time in GMT, call of VK/ZL heard, call of station he is working. RS RST of the VK/ZL station heard, serial number sent and band. Scoring is on the same basis as outlined in the transmitter section and logs and summary sheets kept accordingly.

[*Continued on page 100*]

RESULTS WAE 1962 CONTEST

RESULTS, WAE 1962 CONTEST
Continental Winners

DJ3KR	44,795	EP2BK	28,487	PY1ADA	1241
W3GRF	31,872	5A3TQ	26,838	ZL1APM	621

European (Winners Only)

DJ3KR	44,795	TF3AB	3674		
DJ1PN	23,255	OZ4FF	3096		
DL3KB	20,352	SM3TW	2214		
G2DC	20,736	PA4LV	1207		
OK1ZL	17,765	UC2CS	960		
OK1GT	14,749	YO6KBA	744		
OE1RZ	16,254	HB9UD	702		
F5TM	12,328	LZ1AG	648		
LA5HE	11,088	EA2CR	564		
HA5KFR	7254	IT1AGA	420		
SP6AAT	6400	YU1SF	100		
SP5ZA	1470	UB5JE	63		
OH9NV	4104				

All Scores

North America

W1JYH	15,520	W3GRF	31,872	W9DWQ	3174
W1CKA	4473	W3KA	4553	W9KXK	630
W1GYE	3973	W3AFM	4525		
K1PNN	1936	W3BYX	816	W9BLZ	154
W1WY	120	W3QLW	207		
W2WZ	17,440			VO1AW	4094
W2KVL	1536	W4KFC	4728		
W2AQT	1162	W4HTV	2952	VE3HB	611
K2EKM	174	W4KXV	200	KP4CC	1420
WA2HJF	168				
W2BOT	165	W5WZQ	1800	*South America*	
		W5KC	162	PY1ADA	1241
W9IOP	11,814			HK7ZT	27
W9GFF	3696	W7PQE	1995		
				Africa	
		K8AUP	585	5A3TQ	26,838
		W8KC	352	5A3BC	4760
		W8UMR	200	FA9UO	8436
				ZS6IW	5709
				6W6DF	1500

9Q5AAA	1035		
EL4A	792		
CR7IZ	1		
Asia			
EP2BK	28,487		
EP2BH	10,880		
EP2BB	9823		
JA8AH	630		
JA1VX	539		
JA1BK	133		
JA7AD	88		
JA8LN	45		
UA9BZ	3801		
UA9FX	1518		
UH8BO	350		
Oceania			
ZL1APM	612		
VK3XB	12		

PROPAGATION

George Jacobs, W3ASK
11307 Clara St., Silver Spring, Md.

LAST MINUTE FORECAST

The following is a forecast of day-to-day propagation conditions expected during September, 1962. This forecast attempts to predict *specific* days upon which openings shown in the Propagation Charts in this column are most likely to occur, and the expected quality of the openings. For example, the following forecast shows that circuits rated (2) in the Propagation Charts are most likely to open with "good" quality (B) when conditions are above normal (Sept. 6-7, 18 and 24), and with "fair-to-poor" quality (C-D) on days when conditions are expected to be normal. Circuits marked (2) are not expected to open on those days forecast to be "disturbed," etc.

PROPAGATION CONDITIONS and CIRCUIT QUALITY

Prop. Chart Forecast Rating	*Above Normal Days* Sept. 6-7, 18-24	*Normal Days* Sept. 3-5, 8-10, 13-15, 19 22-23, 25, 29-30	*Below Normal Days* Sept. 2, 11-12, 16-17, 26, 28	*Disturbed Days* Sept. 1, 20-21, 27
(1)	B-C	D-E	E	E
(2)	B	C-D	D	E
(3)	A	B-C	C-D	D-E
(4)	A	A-B	C	D

Where:

A—An excellent opening, with strong steady signals.

B—Good opening, moderately strong signals, with little fading and noise.

C—Fair opening, signals fluctuating between moderately strong and weak, with moderate fading and noise.

D—Poor opening, signals generally weak, with considerable fading and high noise level.

E—Very poor opening, or none at all.

PROPAGATION conditions during September are expected to change somewhat from the conditions that existed during the summer months. Long-distance openings on the higher frequency bands (10 and 15 meters) are expected to increase during the daylight hours, while nighttime openings should improve on the lower frequency bands (40, 80, and to some extent, 160 meters). This trend of higher daytime frequencies and lower nighttime frequencies is expected to continue through the fall and winter months.

Static levels begin to decrease during September, and conditions on all bands are expected to be quieter than during the summer months. There is also a seasonal decrease in ionospheric absorption during the fall months, and signals may sound stronger during many DX openings.

During September, and continuing through the fall months, there is generally a considerable improvement in propagation conditions on long circuits between the northern and southern hemispheres (for example, between the USA and Australasia, or between the USA and South Africa). This improvement should be noticeable on all amateur bands between 10 and 160 meters.

Sporadic E ionization decreases considerably during September, and considerably fewer short-skip openings are predicted for 6, 10, 15 and 20 meters. This month's column contains Short-Skip Propagation Charts for September and October, 1962, as well as special propagation charts centered on Alaska and Hawaii. DX Charts for September appeared in last month's column.

VHF Ionospheric Openings

Meteor activity is at a low level during September, and sporadic-E propagation decreases considerably. Some v.h.f. ionospheric openings may be possible, however, as a result of a seasonal increase in auroral disturbances, which usually takes place during September and the early fall. Check the "Last Minute Forecast" appearing at the beginning of this column for periods that are most likely to be disturbed during September.

Sunspot Cycle Progress

The Zurich Solar Observatory reports a monthly sunspot number of 42 for both May and June, 1962. This results in 12-month smoothed sunspot numbers, upon which the sunspot cycle is based, of 50 centered on November 1961 and 48 centered on December. A smoothed sunspot number of 33 is predicted for September, 1962. The present level of sunspot activity is about the same as it was during the fall of 1952.

160 Meters

As the sunspot cycle declines, conditions on 160 meters are expected to improve. A considerable improvement in 160 meter DX conditions has already been observed during the nighttime hours of the 1960/61 and the 1961/62 winter seasons. Stew Perry, W1BB, now reports on the unusually good conditions observed on this band during the past summer:

"160 meter DXers were thrilled when with the lowering sunspot numbers, and the pick-up in 160 meter DX to hear VP8GQ in the South Orkney Islands, coming through on more than one occa-

sion this summer. VP8GQ QSOed a number of W/VEs, and also EI9J, "Paddy," to whom goes special congratulations.

"On several occasions during late June and July, VP8GQ worked W1BB, W2KQT, W3GQF, VE3QU, VE3GP, and possibly others. Signal reports averaged S7 for W/VE and S4 to 8 for VP8GQ.

"These results further confirm W1BB's conclusion that 160 meters may open to the southern hemisphere better during the summer months than during other seasons. This conclusion is based on W1BB's QSOs with VP8GQ this summer, and QSOs with CP5EQ and other stations south of the equator during previous summers. [It is generally believed that optimum conditions between both hemispheres occur during the spring and fall months. W1BB's research on 160 meter propogation may eventually require revision of present day theories.—*ed.*]

[*Continued on page 98*]

CQ Short-Skip Propagation Chart

September & October, 1962

Band Openings Given in Local Standard Time

At Path Mid-Point (24-Hour Time)

Band (Meters)	*50-250 Miles*	*250-750 Miles*	*750-1300 Miles*	*1300-2300 Miles*
10	*Nil*	09-13 (0-1)	07-09 (1) 09-13 (1-2) 13-21 (0-1)	07-09 (1-0) 09-11 (2-0) 11-13 (2-1) 13-17 (1) 17-21 (1-0)
15	*Nil*	07-09 (0-1) 09-13 (0-2) 13-21 (0-1)	07-09 (1) 09-13 (2) 13-17 (1-2) 17-21 (1) 21-07 (0-1)	07-09 (1) 09-15 (2) 15-17 (2-1) 17-19 (1) 19-07 (1-0)
20	*Nil*	07-09 (0-1) 09-11 (0-2) 11-14 (0-4) 14-16 (0-3) 16-18 (0-2) 18-07 (0-1)	07-09 (1-2) 09-11 (2-4) 11-14 (4) 14-16 (3-4) 16-18 (2-4) 18-20 (1-3) 20-22 (1-2) 22-07 (1)	07-09 (2) 09-13 (4-2) 13-15 (4-3) 15-18 (4) 18-20 (3) 20-22 (2) 22-00 (1) 00-05 (1-0) 05-07 (1)
40	07-09 (0-2) 09-11 (2-4) 11-15 (3-4) 15-17 (2-3) 17-19 (1-2) 19-21 (0-1)	07-09 (2-3) 09-11 (4-3) 11-15 (4-2) 15-17 (3) 17-19 (2-4) 19-21 (1-4) 21-23 (0-3) 23-02 (0-2) 02-05 (0-1) 05-07 (0-2)	07-09 (3-2) 09-11 (3-1) 11-15 (2-1) 15-17 (3-2) 17-19 (4-3) 19-21 (4) 21-23 (3-4) 23-02 (2-3) 02-05 (1-2) 05-07 (2-4)	07-09 (2-1) 09-15 (1-0) 15-17 (2-1) 17-19 (3-2) 19-23 (4) 23-02 (3-4) 02-05 (2-3) 05-07 (4-2)
80	06-08 (3-4) 08-21 (4) 21-03 (3-4) 03-06 (2-3)	06-08 (4-2) 08-16 (4-1) 16-18 (4-2) 18-21 (4-3) 21-03 (4) 03-05 (3-4) 05-06 (3)	06-08 (2-1) 08-16 (1-0) 16-18 (2-1) 18-21 (3-2) 21-03 (4) 03-05 (4-2) 05-06 (3-2)	06-08 (1) 08-16 (0) 16-18 (1) 18-21 (2) 21-03 (4-3) 03-06 (2)
160	16-18 (1-0) 18-20 (2-1) 20-05 (4) 05-07 (3-2) 07-09 (2-1) 09-11 (1-0)	17-19 (1-0) 19-20 (1) 20-02 (4-3) 02-05 (3-2) 05-07 (2-1) 07-09 (1-0)	19-20 (1-0) 20-22 (3-1) 22-02 (3) 02-05 (2-1) 05-07 (1)	20-22 (1-0) 22-02 (3-2) 02-05 (1) 05-07 (1-0)

*Hawaiian Standard Time is 5 hours *behind* EST; 4 hours *behind* CST; 3 hours *behind* MST and 2 hours *behind* PST.

†Alaskan Standard Time is 4 hours *behind* EST; 3 hours *behind* CST; 2 hours *behind* MST and 1 hour *behind* PST.

‡Predicted 10 meter opening; all others 15 meters.

§Predicted 160 meter opening; all others 80 meters.

Hawaii To:

*Openings Given in Hawaiian Standard Time**

	10†/15 Meters	*20 Meters*	*40 Meters*	*80/160‡ Meters*
Eastern USA	08-10 (1)§ 10-12 (2)† 12-13 (1)† 06-08 (1) 08-10 (2) 10-12 (1) 12-14 (3) 14-16 (1)	03-05 (1) 05-07 (2) 07-12 (1) 12-14 (2) 14-16 (3) 16-18 (2) 18-20 (1)	17-19 (1) 19-21 (2) 21-00 (3) 00-02 (2) 02-04 (1)	18-20 (1) 20-23 (2) 23-02 (1) 21-01 (1)‡
Central USA	08-10 (1)† 10-12 (2)† 12-14 (1)† 06-07 (1) 07-09 (3) 09-12 (2) 12-15 (3) 15-16 (2) 16-17 (1)	05-06 (1) 06-08 (3) 08-10 (2) 10-13 (1) 13-15 (2) 15-17 (4) 17-18 (2) 18-20 (1)	17-19 (1) 19-21 (2) 21-02 (3) 02-04 (2) 04-05 (1)	18-20 (1) 20-01 (2) 01-03 (1) 21-02 (1)‡
Western USA	09-11 (1)† 11-13 (2)† 13-14 (1)† 06-07 (1) 07-09 (2) 09-12 (3) 12-15 (2) 15-18 (1)	05-07 (1) 07-10 (3) 10-14 (2) 14-16 (4) 16-18 (2) 18-21 (1)	17-18 (1) 18-19 (2) 19-00 (4) 00-03 (3) 03-06 (2) 06-08 (1)	18-20 (1) 20-22 (2) 22-03 (3) 03-04 (2) 04-06 (1) 20-23 (1)‡ 23-02 (2)‡ 02-04 (1)‡

Alaska To:

Openings Given in Alaskan Standard Time§

	15 Meters	*20 Meters*	*40 Meters*	*80/160‡ Meters*
Eastern USA	11-15 (1)	09-13 (1) 13-15 (2) 15-18 (1)	23-03 (1)	*Nil*
Central USA	11-17 (1)	09-14 (1) 14-16 (2) 16-19 (1)	23-04 (1)	*Nil*
Western USA	12-18 (1)	09-11 (1) 11-14 (2) 14-16 (3) 16-18 (2) 18-20 (1)	23-02 (1) 02-05 (2) 05-07 (1)	02-05 (1)

Forecast Ratings

The numerical ratings appearing in parenthesis following each predicted time of opening indicate the *total* number of days during each month of the forecast period that the opening is expected to occur, as follows:

(1) Less than 7 days
(2) Between 8 and 13 days
(3) Between 14 and 22 days
(4) More than 22 days

On the Short-Skip Propagation Chart, where two numerals are shown within a single set of parenthesis, the first applies to the shorter distance for which the forecast is made, and the second to the longer distance.

For the *specific* days of each month on which a particular opening is most likely to occur, as well as a day-to-day forecast of reception conditions (signal quality, noise and fading levels), see the "Last Minute Forecast" which appears at the beginning of this column.

All times are shown in Local Standard Time, using the 24-hour time system. In this system midnight is shown as 00, 01 is 1 A.M., 02 is 2 A.M., etc. Noontime is shown as 12, 13 is 1 P.M., 14 is 2 P.M., etc.

The *CQ* Short-Skip Propagation Charts are based upon a c.w. effective radiated power of 75 watts from a half-wave dipole antenna, a half-wave or higher above ground. The Charts are valid through October 31, 1962. These forecasts are based upon basic propagation data published monthly by the Central Radio Propagation Laboratory of the National Bureau of Standards, Boulder, Colorado.

sideband sideband sideband

SIDEBAND

IRV and DOROTHY STRAUBER
K2HEA/K2MGE
12 ELM STREET, LYNBROOK, NEW YORK

SSB DX HONOR ROLL

TI2HP	268	G8KS	221
W8EAP	266	W3MAC	220
VQ4ERR	263	WØUUV	220
W2ZX	259	W5IYU	220
W8PQQ	256	WØCVU	220
HB9TL	250	K6ZXW	215
PY4TK	250	W2VCZ	214
W2FXN	250	G2BVN	212
W6UOU	249	YV5AFF	208
WØQVZ	247	W2VZV	201
K8RTW	244	W2YBO	201
K4TJL	242	K5MDX	201
K9EAB	241	K6MLS	201
W5AFX	239	DL1IN	200
W2JXH	233	W1AOL	200
W6PXH	233	I1AMU	200
K2MGE	233	KØCTL	200
MP4BBW	232	W2NUT	200
ON4DM	230	W3VSU	200
PZ1AX	230	UA3CR	200
W6BAF	229	K4PUS	198
W3LMA	228	WA6EYP	194
W6RKP	226	WA6HOH	192
W6WNE	223	PJ2AA	186
W1LLF	221	W7DLR	184

CQ SSB STICKERS AND CERTIFICATES

Worked 250
W2FXN PY4TK

Worked 225
W3LMA PZ1AX
W5AFX W6BAF

Worked 200
W2NUT K6MLS
W3VSU UA3CR
G2BVN YV5AFF

Worked 175
K4JEY K2CJN

Worked 150
ZS6ATA W2PTM
VE3BKL K1JMV
W5DA

Worked 125
K9WUR WA2EOQ
ZS6ATA W5KC
VE3BKL K1JMV
VK4RQ K5OGP
W2PTM W5DA
W9JJF

Worked 100
CR6CA ZE4JN
W1MZB KG6AJB
DL4FC W9JJF
JA2JW K6VNU

Worked 75
WA2NZS KØMAS
ZS6PC ZE4JN
W9JJF

Worked 50
ZS6BBB K4HYL
ZS6PC ZE4JN
ZS1NE W9JJF

WE CAN imagine that reading time and time again about proper operating practices can leave a real fuzzy taste in the mouth of the reader or at best a querulous, "Where the heck did I see that before? Last month?"

If you think it's easy to find a new and interesting way to play the same theme over and over, try it sometime! But you will agree that it is worth the time reading and the effort writing if it will help increase your enjoyment when operating on the air. We have inveighed against the unthinking operator who does not check for a clear frequency; calls "CQ" ad nauseam; talks endlessly without recourse to VOX; and, among other interesting practices, "audiomanship" or the art of cranking up the gain as high as possible.

On numerous occasions, we have tried to dissuade operators, and they are not limited to newcomers to s.s.b. or to ham radio, that the major result of too much audio is power wasting splatter. Too many times we have heard operators say that they "get thru' better" when they see the plate current meter swing 'way up the scale. Now this may be the case in rare instances, but the side products created by this abuse of the audio control far outweigh the doubtful advantage. One of the finest things about sideband is the space conserving ability of a narrow sideband signal. It has been conclusively proven that only 2100 cycles of audio are needed to maintain satisfactory audio contact; that voices are easily distinguishable in spite of the limited passband. Increasing the audio past the point of "no return" has the immediate effect of overdriving the linear and causing "flat-topping" with the generation of splatter up and down the band. Not only that, but the suppression of the third and fifth order distortion products is debased and these now become more apparent—by this we mean that your transmitter is not now performing as the manufacturer intended it to and the specifications you so carefully studied and considered before you purchased your exciter have been made meaningless. Hundreds of dollars of your money and thousands of dollars of engineering and design are thrown

Europeans had the pleasure of meeting Arie, XE1AB, ex-4X4CD, who spent part of the Summer touring the Continent. Arie is very active on 15 and 20 meter sideband from his home in Mexico. *(Photo courtesy of WA2KNC)*

The world-wide movement toward sideband includes operators in the USSR. Shown above (left) is Yuri, UB5UG, and (right) Mati, UR2AT. *(Photos courtesy of K2LZQ and W6YY)*

down the drain with the aid of a dollar "pot" and—well—you've probably supplied the rest.

So, next time you reach for the audio, remember the specifications you destroy are your own!!

Leapmanship

We are asked from time to time to comment on current happenings—some of which are controversial in nature and on which we would like to speak out. Needless to say, the opinion is not always unaminous in our house, as is also the case in a cross section of ham radio operators. This, however, is not a controlling factor in our not using this column to present our views. What does mitigate against this is time itself; you will read this some six to seven weeks after it is written. By that time the problem will either have resolved itself and a satisfactory conclusion been reached or the situation will have evaporated of its own accord. In any event, our silence is dictated only by the time lag inherent in writing a column.

We refer specifically to the July decision of the ARRL not to honor QSL cards from DX phone stations operating below 14,100 kc. Our feelings are that previous consultation with amateur bodies in representative countries should have been polled as to their thoughts on this invasion of the c.w. subsection. If, after such a poll, the decision was made, it would have had the support of hams everywhere in a truly democratic manner.

A hot issue during the hot month of July, it is hoped that it will have cooled sufficiently under the influence of cool thinking of mature amateurs all over the world.

Claimed Scores for the 1962 CQ World-Wide S.S.B. Contest

We wish we could have been able to announce in this issue the final scores in the *CQ* World Wide S.S.B. Contest which took place on March 24-25. However, with the new point system in effect and more prefixes than ever to check out, it has not been possible for us to complete a thorough check of all the logs. Rather than continue the suspense, here's a listing of the top claimed scores as indicated on the logs submitted. We hope to bring you the complete story of this highly successful sideband contest in the next issue of *CQ*.

4X4DK	312,576	UB5WF	111,200
DL3LL	290,836	SV0WT	110,696
SM5BLA	232,434	UA2AO	110,654
ZL3DX	211,528	W1ONK	104,208
PJ2AA	203,220	W2VCZ	100,571
ZL1AIX	172,396	CR6CA	98,140
G4CP	171,248	HB9ZY	89,460
GB2SM	163,064	W2SKE	88,788
ZS5JY	154,732	K2IEG	88,580
XT2Z	152,866	CT1YE	85,200
SM6SA	145,114	UA1KBW	84,672
UA0KAR	143,695	VK6RU	81,926
MP4BBW	140,910	VK2NN	80,920
PZ1AX	133,030	UW3UF	80,864
11SVZ	129,107	K2UVU	80,325
DL4FX	127,658	G3DO	79,722
OE1RZ	125,391	W8KIA	78,407
TI2HP	116,840	YV1EL	77,298

(Please note that some of the above scores have been partially checked and corrected. This will explain the difference between the submitted scores and those indicated above.)

New Transceiver

Using the new RCA 7360 tube in the balanced modulator circuit to give 60 db of carrier suppression, the new Sonar "Mono-Bander" single band s.s.b. transceiver, is the newest addition

There are only a handful of Polish hams on sideband among whom is Chris Slomczynski, SP5HS. Chris runs a 100 watt homebrew rig and puts out a very fine signal. *(Photo courtesy of WA6HOH)*

Jacque, PY2CEZ, came all the way up from Sao Paulo, Brazil, to visit his good friend, Doc, W2CPI, in whose shack he is pictured. Jacque's XYL is Sylvia, PY2CKG, the only Brazilian YL sidebander of whom we've heard. Both Jacque and Sylvia speak eight languages fluently which makes them wonderful contacts for operators throughout the world.

to sidebandry. Soon to be available in models to cover ham frequencies from 80 to 10 meters, the unit weighs but 10 pounds and makes use of two 6GJ5 tubes in the final to provide 180 watts p.e.p. input. Unwanted sideband suppression of 50 db and a receiver sensitivity of 1 microvolt for a 10 db s/n ratio is claimed by the manufacturer. A Collins 2.1 kc mechanical filter is used as part of the transceiver design. We are sure that you will see all the specs listed in the ads, so we will limit ourselves to saying that physically this is a most attractive package and would look good in anyone's shack—mobile or fixed. Both a.c. and d.c. supplies are available as well as a mobile mounting rack. The first deliveries are slated for about the time you read this and if we can beg, borrow or steal one, there will be a more comprehensive report on its operating abilities at a later date.

QRZ

Among the interesting bulletins to hit our desk is *QRZ*, the publication of the Bitburg Amateur Radio Club, Bitburg AFB, Germany. Frankly designed to stimulate and maintain interest in the Reciprocity Bill—S-2361—the bulletin is crammed full of interesting news of other happenings in the ham world, particularly among U.S. hams in service. Edited by John Gross, DL4UI with Assistant Editor, John Barrows, DL4HU, "QRZ" is the house organ of as lively a group of hams as is likely to be found anywhere.

Their continuing effort to insure the passage of S-2361 is certainly to be commended. That it is a subject close to their hearts is understandable when you realize that many of these men have been stationed in areas where they were not permitted to operate due to lack of reciprocity. While relatively few American hams will ever experience the frustrating feeling of being able to listen to all the amateur activity without being able to participate, it should be remembered that such is the lot of many of our servicemen and other hams who are stationed overseas. Conversely, there are many foreign hams who live in or visit our country who would learn a great deal more about our people and our country if they were able to share in the camaraderie which exists among hams. In the latter cases, where their country of origin does permit Americans to operate, the imposed quiet period on their ham activities must be particularly galling.

How many of you have heeded the urgings of *CQ* and *QST* to write to your Representatives and Senators in Congress, urging favorable attention to this Bill? It is not too late to do so! Write your Congressman *today!*

Capt. John Walton, W5BJV, was a crewmember on the record-breaking flight back in March when a B-58 bomber set a new speed record from Los Angeles to New York and return. The Bendix Trophy was awarded to the crew. John operates from his shack in Ft. Worth, Texas, on 15, 20 and 40 meter sideband. *(Photo courtesy of WØZZQ)*

Sidebander In The Spotlight

We're inaugurating a new feature this month—turning the spotlight on interesting sideband operators whom you may have heard or worked and about whom we think you'd like to know more.

Our first "Sidebander in the Spotlight" is John H. Grady, K4TUA, of Warner Robins, Georgia. John is the author of the *DXer's QSO Handbook* and of several articles in *CQ*, the most recent of which was "How to Get QSL Confirmations" in the June, 1962 issue.

John was licensed in 1921 in St. Louis, Missouri and, from 1921 through 1927, operated under the calls of 9DVM, 9DDZ, 9YN, and cooperator of 8DKN. After graduating from Ohio State University in 1927 with a degree of Bachelor of Ceramic Engineering, John served as Senior Partner in the Consulting Management Engineering firm of Grady and Grady in St. Louis until 1958. Extensive travel requirements and excessive time spent away from home prevented any amateur operation during this period.

In 1958, John accepted a civilian position at Warner Robins Air Force Base, Georgia

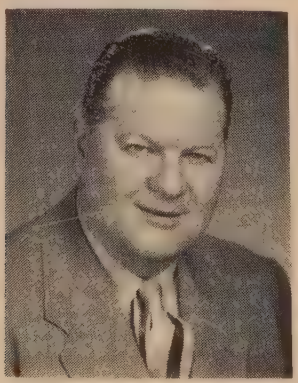
and was assigned the call K4TUA. He immediately established for himself the objective of being the first amateur station to work all prefixes in the world on 20 meter c.w.

During each of his 8000 QSO's from 1958 to 1961, a request was made of each DX station, when possible, as to his favorite operating time and frequency. These facts, combined with information secured from correspondence with DXers and from 75,000 receiver sampling observations, provided the basis for his publishing of the *DXers QSO Handbook*. His publication outlines the scientific techniques for successfully achieving the amateur's diploma/certificate objectives in a timely manner. It lists the favorite operating frequencies and best operating times of 4,222 DX stations (located in 273 DXCC countries using 583 prefixes) operating on the 40, 20, 15, and 10 meter bands and using c.w., s.s.b., and a.m. The Handbook sells for $3.25 postage paid from K4TUA.

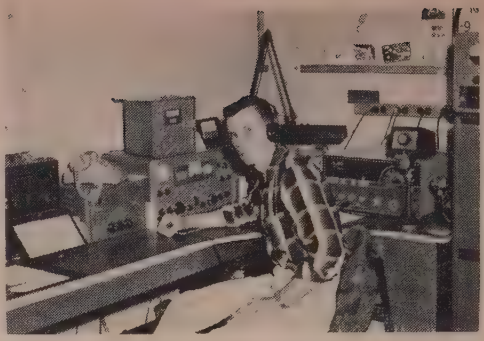
John Grady, K4TUA, has never been content to be "just another contact." He is always striving to assist in the improvement of ham radio and ham radio operators. We salute him!

Contributions Requested

Summer, 1962, will probably go down in ham history as one of the most active periods for rare DX activity, negating the normal seasonal lull and the poor conditions attributable to the sunspot minimum. Gus, W4BPD, activated the Aldabras on sideband; Vince, VK2VC, visited Lord Howe Island; Bill, VK3AHO, put ultra-rare Wallis Island on sideband; and Dick, WØMLY, hit the jackpot with sideband activity from many of the new African Republics. So frequent was the DX activity that one hardly had time to laze in the sun, mow the lawn, paint the shingles, or attend to other usual summer activities. But there were no complaints; the Honor Roll boys



Chuck Boegel, WØCVU, Cedar Rapids, Iowa, is the first and only amateur in the world to achieve the coveted Empire DX Certificate on two way sideband. Chuck worked for this Certificate for five years and deserves the congratulations of sidebanders every where for his achievement.



Here's a top notch operator who is admired and respected by all for his operating prowess—none other than Aug, K2UVU, of Albany, New York.

rubbed their hands with glee as each new confirmation arrived and DX novices suddenly found themselves on the receiving end of many rare contacts. The DX novices also found that a relatively new practice had been introduced into DXing and that was the matter of "contributions."

Before the Jet Age, it was unlikely, unless a ham was scheduled to visit a desired country on business or holiday or unless there was a native ham willing to spend the many hours necessary to satisfy the hue and cry, that the great demand for "new countries" could be satisfied. In this era of speed and convenience, no spot is too remote for the dedicated DXer. So we have seen evidence of a VK3AHO, relinquishing his two-week vacation time to sit for hours operating on sparsely inhabited Wallis Island; or a WØMLY who set up rigs and antennas in a new country every few days—all to be of service to the ham fraternity.

In these two cases and other similar ones, expenses are initially paid by certain other hams here in the States to get the ball rolling. Shipping equipment is expensive and so is the transportation necessary to get the operator over to the rare spot. Thus, the request for "contributions" which DXers, who appreciate a prompt return of a confirmation or who appreciate the careful planning and expense behind the above-mentioned DXpeditions, are requested to enclose.

The general feeling regarding this practice is that it is not objectionable—providing no effort is made to force a contribution in order to receive a confirmation. It is felt that some, if not all, of the expenses incurred should be returned to the "backers" of a DXpedition but only at the discretion of the ham concerned. Any other pressure meets with a stubborn resistance and much ill will.

So there it is—if you like to work a rare new country and it is possible to do so only because some ham goes to great lengths to insure activity from that spot, you can express your appreciation by enclosing a contribution with your request for a QSL.

73, Irv and Dorothy

Space Communications

GEORGE JACOBS, W3ASK
11307 CLARA STREET,
SILVER SPRING, MARYLAND

OSCAR II, the second radio amateur satellite, ceased transmitting shortly after 0910 GMT on June 20, during its 295th orbit around the earth.

From the moment OSCAR II successfully entered orbit on June 2, a 100-milliwatt, 2 meter radio amateur beacon transmitter aboard the satellite sent a continuous series of HI's, in Morse Code, to radio amateurs and other scientific observers in all corners of the world. During this 18-day "on-the-air" period, OSCAR II traveled more than 7 million miles, high in space.

Radio transmissions from the OSCAR II satellite were last reported heard by WØPAM and WØJHS of Minneapolis, Minn. at 0910 GMT, June 20. Both amateurs noted that the HI rate (a measurement of the temperature within the satellite), was increasing rapidly during the pass. Calculations indicate that the temperature within the satellite at the time was higher than 130 degrees F., which is close to the temperature of transmitter failure. OH7NV of Kupio, Finland, who had copied OSCAR on its 294th orbit, was standing by to copy it on the 295th orbit, but he never heard it. It is reasonable to assume, therefore, that the satellite's transmitter failed somewhere over the northern hemisphere between Minneapolis and Kupio.

During OSCAR II's 294th orbit, the last complete orbit before its transmitter failed, the satellite's period dropped to 87 minutes, and the HI rate was increasing steadily, both indicating that the payload was losing altitude rapidly. Radar measurements made shortly after the beacon transmitter failed, confirmed that OSCAR II was re-entering the earth's atmosphere at the time. The actual burn-up of the satellite is believed to have taken place on June 21, during its 317th orbit. OSCAR II officially goes down in space history bearing the Greek name 1962 CHI 2.

Don C. Miller, W9NTP, is one ham who wasn't "caught with his antenna down" when OSCAR II was launched on June 2. Shown above is Don's homemade 7-looped helical antenna which he and his XYL, W9CNW, used for tracking OSCAR II. The antenna's 14-foot center boom is made from a split 2 X 4, and the guys are made of "glass line." Half-inch hardware cloth is used for the ground plane. Changes in azimuth and elevation are both made manually by rotating the mast, and using a pulley arrangement attached to the ground plane. The antenna has a gain of 12 db at the design frequency of 145 mc.

OSCAR II's Launch

The launch of OSCAR II was as exciting and nerve-wracking as the launch of amateur radio's first satellite, OSCAR I, on December 12, 1961. The rocket booster, on which OSCAR was riding piggy-back, soared majestically into space at 0032 GMT, June 2.

While all indications at the launching site were that the launch was A-OK, trouble developed on the communication link between radio amateurs carrying news from the launching site to the amateur control center at Project OSCAR Headquarters 300 miles away. The 40 meter link between both locations failed as a result of poor propagation conditions. A relay point was established through Phoenix, Arizona, but this also failed a few minutes before launch. The coded "blast-off" message finally was received by W6EE/6 at OSCAR Headquarters via 5 separate relay stations, one of which was a mobile operator driving along the highway north of San Francisco. The blast-off message reached W6EE/6 barely in time for relay to W4ABY on 14 mc s.s.b., who had an open line to KC4USB, at the initial orbiting tracking station in Antarctica.

Gloom fell over OSCAR Headquarters as KC4USB reported no signal at the time OSCAR II was supposed to be overhead at Antarctica. Had the satellite failed to orbit? Perhaps its beacon transmitter was inoperative? Each minute seemed like a lifetime as the clock ticked away slowly, and still no reports of OSCAR reception. The last hope for OSCAR II, as time for the completion of the first orbit neared, was that KL7 stations standing by in the far north would hear it. The first electrifying message that OSCAR II's 2 meter signals were received came from KL7FLC on the Arliss II Ice Island. The message was received on the 14 mc OSCAR net almost 80 tense minutes after launch. Initial orbital information indicated that the satellite's period (91 minutes) and inclination (74.25 degrees) were such that OSCAR II probably missed the KC4 in Antarctica by many miles. OSCAR II was in orbit, and its beacon transmitter was operating

On July 10 the successful launching by the USA of the TELSTAR satellite blazed new paths in the field of commercial international communications. Within two weeks after launch, the experimental active communication satellite accomplished a string of communication firsts, including the first exchange of live television broadcasts between Europe and North America. Shown left, in front of the dome which encases the giant horn antenna at ATT's ground station near East Andover, Maine, are four radio amateurs participating in the TELSTAR project. Left-to-right: Hans Weisofenning, DL1VJ; Serge Canivenc, F8SH; Lyle Hegsted, W7QCU and Len Dryer, W1DCC.

on 144.922 mc with loud and clear signals. Amateur radio had successfully taken another giant step forward in the space age!

Reporting OSCAR II Reception

The Project OSCAR Association reports that by mid-July, 428 radio amateurs and other observers in all corners of the world had reported hearing OSCAR II's radio signals. At the time, reports were still flowing into OSCAR headquarters. A large volume of excellent data was received from Australia, Finland, Austria and England. While regretfully, the flow of reports isn't much greater than the response to OSCAR I, the Association notes that OSCAR II reports show a much higher degree of technical competence and awareness. Many OSCAR II observers computed doppler curves, determined satellite slant range, and calculated the satellite's period and orbit. Apparently the self-training program carried on since OSCAR I's launch is working well.

As has been emphasized many times in this column before, getting an OSCAR satellite into orbit is only half the job. The final success of the OSCAR program depends upon the wholehearted participation of radio amateurs throughout the world. A total of 570 radio amateurs and other observers, in 25 countries, reported reception of the OSCAR I satellite. It was expected that a much greater number of observers would participate in the OSCAR II project. *All* radio amateurs who heard OSCAR II are urged to send their QSL cards to the Project OSCAR Association, Box 183, Sunnyvale, California. The card should contain the time of reception, signal strength and duration of signal, and if possible, the number of seconds taken for the satellite to send 10 HIs. Your report will not only help advance man's knowledge of space, but will also establish the increased importance of amateur radio in the space age.

Echo II Progress

On July 19, the National Aeronautics and Space Administration (NASA) successfully flight-tested a 135-foot diameter balloon of a type which is expected to be launched into orbit later this year as a passive communication satellite. Fired in a sub-orbital path to an altitude of approximately 900 miles, the huge balloon's ejection mechanism and inflation technique worked completely satisfactory. No communication experiments were conducted during this test. A similar flight-test failed earlier this year.

With the latest success in NASA's A-12 test program, a similar balloon is expected to be launched into orbit, perhaps as early as October. The balloon's rigidized frame of laminated aluminum and mylar plastic will be used to reflect v.h.f. and u.h.f. radio signals over great distances, in much the same manner as the ECHO I satellite which has been in orbit since August 12, 1960.

Radio amateur participation in NASA's A-12 program is being coordinated through the *Office of Satellite Scatter Coordination*, under the direction of Raphael Seifer, K2QBW. Additional information concerning radio amateur participation in this program can be obtained directly from the OSSC at Room 10-206 (CQ), MIT, 77 Mass. Ave., Cambridge, Mass.

Book Review

An exceptionally interesting and informative paperback book on space activities has been published recently. Entitled *Projects: Space,* it was written by Miss Judith Viorst, with the technical cooperation of the National Aeronautics and Space Administration. This well-written and easy to read book gives a full account of America's peaceful space activities, from Explorer I right up to the moment of John Glenn's dramatic man-in-space flight.

Projects: Space is divided into two main parts. The first half of the book describes each satellite that has been launched by NASA through February, 1962, both manned and unmanned. This part of the book also provides information on many NASA space projects planned for the future. Among the many big space projects discussed in detail by Miss Viorst are Mercury, Apollo, the Tiros weather satellites, communication satellites, Ranger, Mariner and many other projects thrat may eventually reap many benefits for all mankind. Interesting chapters are devoted to a description of NASA's rocket line-up, tracking systems, and the colorful new language of the space

[*continued on page 102*]

VHF

DONALD L. STONER*, W6TNS
ALTA LOMA, CALIFORNIA

50mc. 144mc. 220mc. 420mc. and above

THE 1962 *CQ* World-Wide VHF Contest is now history and I must apologize for the late results report. It was not possible to complete the spot checking in time for the column this month, but we'll have them for Oct.

The level of activity, although over 1,000, was lower than in previous years for several reasons. Ole' Mom nature put on a very poor performance both weather and propagation-wise. Nothing which could be called a real opening was noted. The cold temperatures put a fat damper on many planned expeditions and forced others to retire before the end.

Another big factor was the omission of the power multiplier. Somehow, in the transition period, this was dropped and I disclaim responsibility. As a result, the low power stations did not have a show of making any high scores. All top section winners used 60 or more watts.

Now a word about next year. The power multiplier will be back and I propose a figure of three for any rig in the Communicator, Pawnee or Polycom class (25 watts or less). Powers of 25 to 100 receive a multiplier of 2 and above 100, no multiplier. Of course, this penalizes the chap who spends many long hours home brewing a rock crusher in favor of the guy who buys a Communicator. However, I must abide by the majority wishes as evidenced by the comments on the summary sheets. A special multiplier of four is proposed for Sixers and Twoers *unmodified*, which means only the original standard receiver and transmitter. Accessory recievers or other selectivity gadgets will invalidate this class. I would also like to see an s.s.b. multiplier for one or two-way, but have not figured out a way to do it without making the rules horribly confusing. Any suggestions?

These are simply proposals which grew out of the comments on the contest summary sheets. There is no doubt that the rules for 1962 were unfair to the majority. Probably a one contact per hour minimum is also in order. Let's hear from you on what you want. If the rules are not equitable next year, it's your fault. Don't wait until next March to write—do it now!

CQ Century Club Awards

50 mc

104—Frank L. McJannet, K7LQI
105—Warren C. Nottingham, K9RCZ Carolyn Nottingham, W9CKW
106—Masa Takeuchi, JA1IZ
107 and 108—Wm. E. Jones, K4UQM
109—Raymond Andrews, K9DUR
110—Richard Vokatis, WA2OXF
111—Norman Berlat, WA2TQT
112—Don Gillmore, WA2QCQ

144 mc

108—Don Gillmore, WA2QCQ
109—Berta (Mike) Eggert, WA4BMC
110—George Roble, K9CNF
111—William Johnson, K4NLK
112—J. M. Torrence, K4YYJ

VHF CC

Speaking of contests, the numbered list of amateurs and their calls represents the applicants who have been issued VHF Century Club certificates during the past three months. I am particularly pleased to include Masa Takeuchi, JA1IZ, on the list. Masa worked the required 150 stations on six meters in only six months. Although the majority of contacts were JA stations, a few VK's were included on this list. Congratulations, Masa, from the gang at *CQ*.

The VHF CC certificate is issued to promote v.h.f. activity and it seems to be doing just that. Once again, for those not familiar with the rules, 150 contacts in 12 months are required on six, only 100 are necessary for two. Have two amateurs inspect your QSL's and verify your listing of contacts. Mail the list to me and I will try to get it out in 30 days. Note particularly that you should use the Alta Loma address. The civil servants in Ontario are getting nasty about forwarding my mail.

420 High Power

At this writing it appears that we are in as far as high power on 432 is concerned. Altimeter operation, which has been the primary interference problem, must vacate this band by February 15, 1963 (Rules Part 2.106 footnote US6). However there are still some special problem areas such as White Sands and Point Mugu where guidance equipment is used in this band. John Chambers, who lives within the power restricted radius of Point Mugu had a long talk with an official at that base. John was advised that their equipment was clear of the 432-433 section of the band and that they had no objection to high power amateur operation in this narrow spectrum. However, they are not giving blanket approval but rather, will issue permission on an individual basis. They must know who the high power stations are should an occasion arise where these frequencies are needed for short periods. If the high power 432 ruling does go through and you live in one of the restricted areas, contact the base for your individual permission. Don't bother them if you are not genuinely intending to go

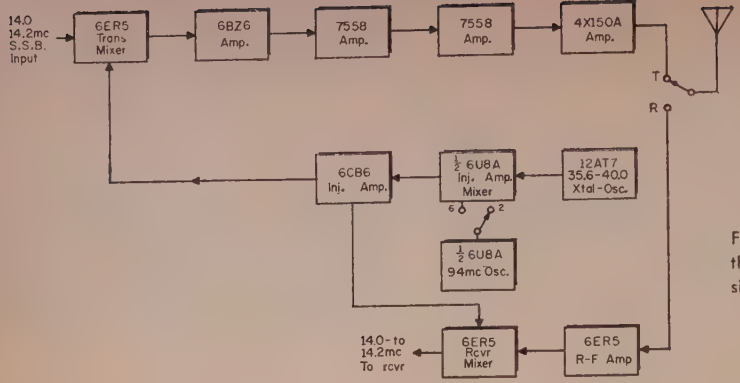


Fig. 1—Block diagram of the new Collins 62S-1 v.h.f. single sideband adapter for six and two meters.

high power. Unnecessary paperwork costs all of us money! Our thanks to those who have worked so hard to get this power increase for the amateur fraternity.

Techs On Ten?

Many techs have been crusading for ten meter privileges and I can tell you something is cooking at the highest levels of the ARRL. Rather than issue petitions to the FCC in a helter-skelter manner, I would strongly suggest you contact your ARRL Division director. Drop him a post card and say "I want techs on 10" or "I don't want techs on 10". If, by the end of the year, something has not been decided one way or the other, *then* is the time to petition the FCC. Many of the techs who complain that the League isn't doing anything for them cannot even tell you the name or call of their director! I personally am all in favor of full c.w. privileges for the techs on ten. However, I shudder to think of some of the 6 meter antics being propagated for foreign consumption—know what I mean?

Let's Get Technical

The New 62S-1—Sideband activity on six and two meters will be receiving a tremendous "shot in the arm" as soon as deliveries start on the new Collins 62S-1 s.s.b. v.h.f. adapter. The unit is designed to extend the range of the S-Line equipment up through all four megacycles of both the six and two meter bands. Several hundred kilocycles overlap at the ends is provided on each band for MARS and CAP activity.

The large knob on the new 62S-1 does not tune a p.t.o., but rather selects crystals to determine the output frequency. It is designed to be used in conjunction with the S-Line equipment.

As usual with Collins gear, there are no cost or performance reducing shortcuts. A block diagram of the 62S-1 is shown in fig. 1. The master oscillator for the injection chain uses a series of crystals between 35.6 and 40.0 mc. For six meters, this signal is used directly for injection into the converter. This section consists of two 6ER5's as r.f. amplifier and mixer. The same injection signal is used for the transmitter mixer which operates at a very low level. The s.s.b. frequency for both bands and all frequencies is 14.0 to 14.2 mc. The mixer is followed by a three-stage amplifier which drives the 4X150A final amplifier. All stages are resonated by the customary Collins slug/rack arrangement.

On two meters the tuned circuits are band-switched and an additional 94.0 mc oscillator is switched into the circuit. This heterodynes the 35.6-40.0 mc xtal oscillator to 129.6 to 134.0 mc, which provides the correct local oscillator frequency to work with a 14.0-14.2 mc i.f.

Important ratings for the new 62S-1 are as follows: Power in—160 watts p.e.p., min. power out—65 watts p.e.p., unwanted oscillator and mixer products—60 db below p.e.p., second harmonic—35 db below p.e.p., noise—40 db below p.e.p., sensitivity—1.2 microvolts for 10 db (S+N)/N with 3 kc bandwidth, image rejection—better than 100 db on six and 60 db on two meters.

You can expect the new 62S-1 to provide the stimulus for v.h.f. sideband as the S-line did on the d.c. bands. Lots of luck to Collins with their new v.h.f. adapter.

The VHF "Quacker"

"Sure I'd like to get on v.h.f. sideband, but I can't afford it—it's too expensive". Hocum, balderdash and other phrases denoting disagreement!! Sideband on v.h.f., like Novice operation, is only as expensive as you decide to make it. If you could get on v.h.f. sideband for fifty bucks (or less) would you do it? Okeh, put up or clam up, as the saying goes.

The theory of single sideband is much too complex to cover fully in this column. If you

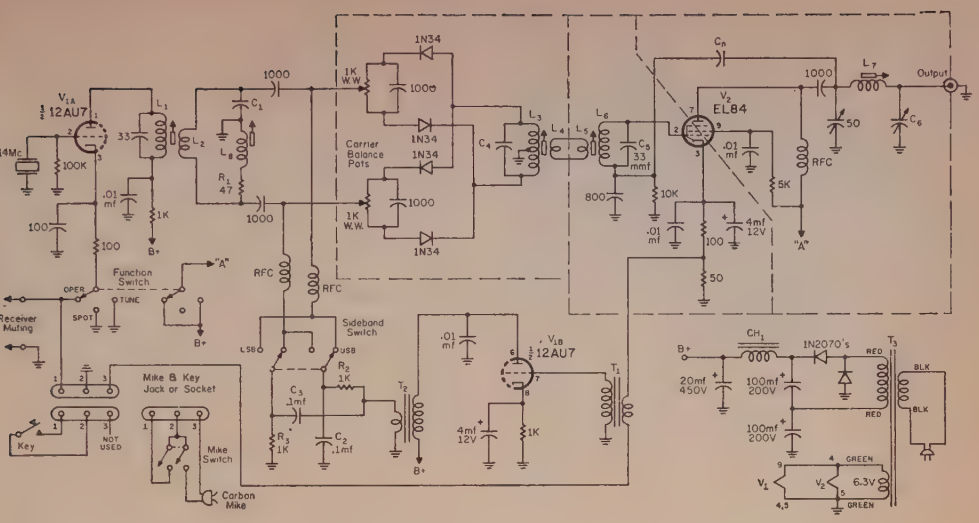


Fig. 2—Circuit of the "VHF Quacker," a simple and inexpensive sideband generator providing ample 14 mc output to drive most v.h.f. sideband heterodyning units. Although the unit has only about 15 db sideband suppression, it represents a substantial improvement over an a.m. signal of similar power.

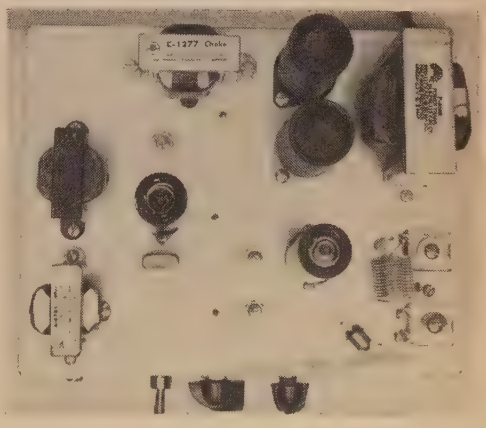
C_1—100 mmf silver mica.
C_4—390 mmf silver mica.
C_6—25-250 mmf compression padder.
L_1, L_6—14 t. #28 e. closewound on ⅜" dia. slug tuned form.
L_2—4 t. of small hookup wire wound over L_1 (Note: do not twist the link wires more than one or two times).
L_3—6 t. bifilar wound on ⅜" form, spaced two wire diameters. (See fig. 4.)
L_4—1 t. link wound over center of L_3.
L_5—1 t. link wound over cold end of L_6.
L_7—13 t. #22 ¾" diameter spaced one wire size (Air-Dux 616).
L_8—8 turns #22 e. ¼" diameter, spread or compress to adjust.
T_1—Any carbon mike to grid transformer (such as Stancor A-4705).
T_2—Any plate to line transformer approximately 10K to 2K (such as Triad A-23X).
T_3—Power transformer, 117 v. at 50 ma, 6.3 v. at 2 a. (such as Merit P-3045).

would like to learn more about s.s.b., such as why it will provide almost 10 db more talk power than an equivalent a.m. signal or gets through just as well as c.w., look up a copy of the CQ *Sideband Handbook*. It will make a believer of you!

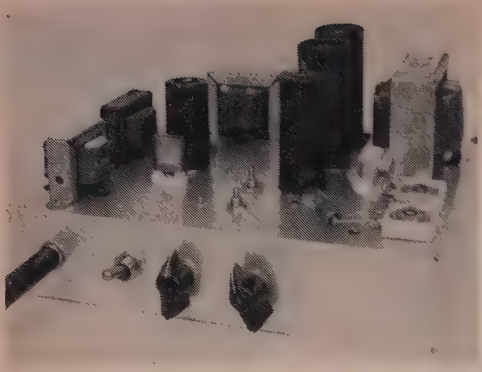
The first thing you need is a source of sideband on a frequency high enough to provide adequate image rejection. One of the simplest sources is the "Tucker Tin Two" designed in New Zealand by ZL2AMJ. The name comes from the New Zealand slang word "tucker" which means the same as our slang "chow". The original rig was built on a cake pan or "tucker tin". Only two tubes are required to generate a respectable s.s.b. signal.

The original circuit, from which I stole the idea, was designed for operation on 75 meters. However, it works equally well on 14 mc with the values given. Naturally, this signal must be then heterodyned to either six or two meters.

A 14 mc crystal oscillator drives the ZL1AAX phase-shift network configuration to provide the necessary 90° signals for the balanced modulators. The carrier is balanced out with



Top view of the "VHF Quacker," a simple, low power sideband exciter for 20 meters. At the left are mic input transformer T_1 (front) and plate-to-line transformer T_2. The plate tank circuit consists of two trimmers and a length of coil stock as is seen at the front right. V_2, the EL84 is left of the tank with L_3 and L_6 visible at the left of V_2. To the rear of V_1 is oscillator plate tuning coil L_1.



The front view of the "VHF Quacker." The Tune-Operate switch is to the left of the two balance-pots.

the usual 10A configuration. The modulator consists of a carbon microphone driving a triode amplifier and simple audio phase-shift network. Carbon microphone current is obtained from the cathode of the linear amplifier. The signal at L_5 consists of a single sideband, suppressed carrier which is amplified by the EL-84 (the same as our 6BQ5), which operates as a linear. The power output is about 5 watts peak envelope power (p.e.p.) which is about the same as the 10A and more than enough for injection into a homebrew mixer. The output pi-network will match a variety of loads. Because the audio phase shift network can be correct at only one audio frequency (about 1200 cycles), the average sideband suppression is only about 15 db. Although this is not truly good suppression, it is a vast improvement on the regular a.m. signal, particularly in terms of talk power.

Parts placement is not very critical. The oscillator circuit should be spaced away and shielded from the final amplifier. There should be a minimum of coupling between coils. Note that a shield partition separates the 12AT7 circuitry from the final. The only components common to both sides are the potentiometers. Although you may not notice it in the photos, a small shield plate separates the input and output circuitry of the 6BQ5 (EL84). Capacitor C_n should be a 3-30 mmf padder and is adjusted as follows: disconnect the B+ lead from the 6BQ5 stage and connect the output jack to a receiver tuned to the crystal frequency. Back the receiver r.f. gain way down to prevent overload. Insert a small amount of carrier, until the signal can be heard, and tune L_7 and C_6 for maximum signal. Then adjust C_n for minimum. You should hear a very sharp null in the signal.

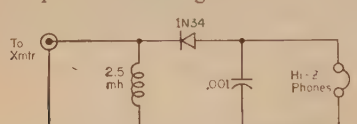


Fig. 3—A simple detector suitable for aligning the "VHF Quacker" sideband generator.

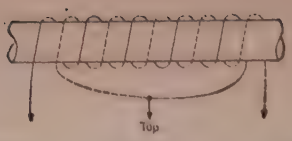


Fig. 4—Winding procedure for L_3, the bifilar-wound coil for the "VHF Quacker." See fig. 2 parts list for details.

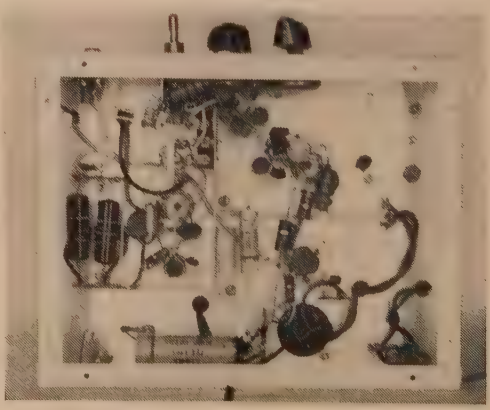
The best feature of the "VHF Quacker" is that you can give it a complete tune-up in an hour or so and *without an oscilloscope!* Here's what you will need:

1. A receiver covering 14-15 mc which can copy sideband.
2. A detector (see fig. 3) and earphones.
3. A good audio oscillator with clean waveform.

Here's how you tune up the "VHF Quacker."

1. Turn on the rig and allow a 15 minute warmup.
2. Disconnect the microphone transformer lead from the junction of the cathode resistors and connect the audio oscillator to the primary winding. Loosely couple the "Quacker" output to a receiver and depress the push-to-talk switch.
4. Tune in the crystal oscillator frequency on the receiver and adjust L_1 until the oscillator "takes off." Peak L_1, L_3, L_6 and L_7 for maximum signal in the receiver.
5. Now connect the detector and turn up the audio oscillator until you hear a tone in the headphones. Keep the oscillator turned low for if you overload the transmitter your adjustments will not be correct. Once again peak L_1, L_3, L_6 and L_7 for maximum tone volume.
6. Now let's suppress the sideband. Adjust the carrier balance potentiometers and L_8 for minimum tone volume. The carrier balance potentiometers will be very sharp and the adjustment of L_8 is very broad.
7. Repeat all adjustments—Maximum tone L_1, L_3, L_6 and L_7, minimum tone—two carrier balance potentiometers and L_8. Switch

[Continued on page 103]



Under chassis view of the "VHF Quacker" showing the layout of components. Coil L_8 in the r.f. phase shift network is near the Tune-Operate switch.

ham clinic

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NEW YORK 36, N. Y.

THERE is nothing more frustrating than to tune in a s.s.b. signal and soon lose it because one is using a radio receiver with poor frequency stability.

Not too long ago (before s.s.b.), a kilocycle drift in the first 20 minutes of set operation still enabled one to operate satisfactorily in the a.m. mode. But now, for intelligible speech on s.s.b. (without a lot of tuning control readjustment) a receiver must settle down quickly to be worth the space it occupies.

Now *every* receiver will evidence *some* drift during warm-up—for this reason some manufacturers try to hold it to the bare minimum by continual heating of the oscillator filaments. This is usually accomplished by providing a separate filament transformer for the purpose.

The frequency stability of *any* receiver is influenced by a number of variables—the most important being the effect that varying temperature has on frequency control components. Heat expands metal and cold contracts it—the best coil and capacitor in the world will change value when subjected to temperature extremes. Too, when a tube warms up, its elements expand and "creep" away from each other thus a change in capacitance results. Critically tuned circuits exterior to the tube are of course influenced by the change, especially at u.h.f. and v.h.f.

When current flows through a coil a certain amount of heating takes place. This heating may be small but still enough to cause expansion of one or more turns of the coil with a resultant change in inductance. At the higher frequencies coil heating is a problem.

A well designed receiver with excellent stability will always have its oscillators located so that the effects of the heat radiated by the power transformer, tubes, bleeder and so on are minimized.

As pointed out before, electronic components age, and as they do they will either "settle down" in value or become erratic. No matter what one does, there comes the time when a receiver "has seen its day."

With age, capacitors change value or become more sensitive to temperature changes. Resistors change value either in a positive or negative direction, and coil windings loosen. Little wonder then that some hams have trouble trying to stabilize that old receiver!!

Humidity is another influencing variable on frequency stability. One manufacturer incorporates a dehumidifying agent in his oscillator unit; for having practically conquered the heat problem he found that humidity if not controlled up to a certain point contributed to instability. To use heat to get rid of humidity created a temperature problem, so the only recourse was to use a dehumidifying agent.

A ham friend of mine living in the tropics told me that it is necessary to leave his receiver on continuously, otherwise the high humidity would soon ruin his expensive receiver. He still encounters a certain amount of variable drift due to temperature changes.

Stabilizing Old Receivers

"How do I go about stabilizing my old receiver for s.s.b. work?" is a question received by HAM CLINIC in nearly every mail. This is a difficult question to answer for it depends on the type of receiver.

If ceramic type coils and air-spaced trimmers are used in the set, the problem is not difficult. On the other hand, if the set uses coils wound on paper base phenolic, and mica trimmers, the task is not easy.

The procedure I recommend for stabilizing old receivers is as follows: first, if possible, install a crystal controlled oscillator and second mixer. Next, regulate the filament voltage on the local oscillator—this is accomplished by using a ballast tube. Note: this change may not be necessary, so do it after you install a filament transformer to feed the b.f.o., local oscillator and crystal controlled mixer-oscillator. The transformer should have a current capability of twice the current required, and connected directly to the 110 v.a.c. line thus permitting continuous operation of the oscillators.

The plate and screen voltages of the tubes in the stages just mentioned should be stabilized. This may require one or two v.r. tubes and is worth the trouble! If you install a product detector, the oscillator (b.f.o.) feeding it must definitely be voltage regulated.

Now here comes the hard part: try to obtain ceramic coils (for those at least in the oscillator circuits)—don't worry about the b.f.o. because it generally operates at or near the i.f. and is not critical as to the type of coil used. Where you can, use air trimmers carefully mounted so that they are mechanically stable. If you will take a look at the underside of an NC-303, you'll get what I mean.

Replace all resistors feeding oscillator and mixer circuits by using resistors having twice the wattage rating. For example, a ½ watt resistor should be replaced with a 1 watt unit.

Replace silver mica capacitors with new ones. Use Mylar capacitors for screen bypassing, and remember, these condensers are very stable. In fact, some Mylar units will outperform silver mica units.

Next in the order of things, check the swaging of your main tuning gang plates—especially the oscillator section. This means a general tightening. Replace old rubber shocks (if used) and make certain that the main frame of the tuning gang is grounded with a strap of braid on both ends.

Use IERC heat dissipating shields on all tubes—they are worth the dollar they cost. To continue using the old JAN type shields with their heat retaining qualities after the above changes have been made is like transferring a Model "T" engine to a new Lincoln chassis.

Last but not least, align the set according to manufacturer's instructions. The above changes accomplished on an old SX-28A receiver resulted in less than 350 cycles drift in the first 4 minutes of operation. After 20 minutes the "old work-horse" settled down to the point where the bandspread dial read within 400 cycles of calibration points and stayed there.

Yes, stabilizing an old receiver takes a lot of work. In some cases it takes a lot of time juggling negative and positive temperature coefficient capacitors too—over a period of many hours—to get the stability you want.

When you buy a new receiver and pay over $300 you should expect frequency stability and get it. But for goodness sake, do not expect 50 cycle stability as some young hams do.

Observation

Evident from the letters received from HAM CLINIC readers is an intense interest in "simple" s.s.b. gear—like the Adapt-O-Citer which appeared in the June column.

A number of hams have written in saying that they would like to see more articles on product detectors and transistorized receivers.

As time goes on we are sure that the *CQ* editorial offices will be receiving many manuscripts devoted to the subjects mentioned—at least we hope so.

Observed: the average ham is continually looking for new ideas and simplicity in ham equipment design.

If you have something which will appeal to the ham limited in funds, which you believe to be of general interest because it is novel or a worthwhile modification of an existing item, why not photograph and write it up for *CQ* readers—we are sure that the editor will give your manuscript a warm reception.

In the event that your idea or item is too small for an article, send it in to HAM CLINIC for publication. We'll be glad to hear from you.

Questions

Cooler 75A-4—"Although my Collins 75A-4 receiver works like a charm, I feel that its internal temperature sometimes gets a mite high, especially when the outside temperatures here in Arizona climb up to 110°F. or so. Any ideas for bringing down the internal temperature without a major overhaul job?"

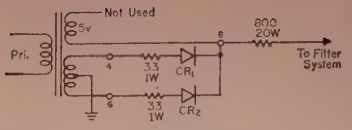


Fig. 1—Circuit illustrating how the 5Y3 rectifier in the 75A-4 may be replaced by silicon diodes to reduce ambient temperatures.

Yes. Thanks to "Cap" (W2AOR/W4TAI) here is some information which will help you.

"I found that my 75A-4 seemed to be running a little warm," writes Cap, so I proceeded to make the following changes: I replaced V_{19} (6AL5) with top-hat type silicon rectifiers; V_{10} (6AL5) with 1N34 crystal diodes; likewise V_{12} and V_{16}; and V_{17} (5Y3) with top-hat silicon rectifiers.

"In replacing the 5Y3, a plug-in unit was made using an octal plug and mounting the surge resistors and silicon diodes on the plug. I measured the total current in the B plus line and figured that the 33 ohm one watt series resistors would do as fuses for protection of the power transformer secondary in the event of diode breakdown, as well as surge resistors for the diodes. I inserted an 800 ohm 20 watt dropping resistor in the B plus line which reduced the current through the voltage regulator tube to 15 ma and thus allowed it to operate cooler. The reduced B plus voltage to the rest of the tubes in the set resulted in all tubes running cooler and had no effect on the performance of the set except a very slight reduction in audio output. The 75A-4 has more audio than can be used anyway, so the reduction was inconsequential. The receiver now runs better than 50% cooler and tube life has more than doubled.

"While I was at it I replaced V_2 (6DC6) r.f. amplifier with a 6BZ6 simply by directly replacing it. The receiver seems to have slightly less thermal noise and a noticeable increase in sensitivity."

Figure 1 shows how the 5Y3 was changed with silicon rectifiers.

VFO-62—"I use remote switching with my National VFO-62 and it has a slight drift. Without remote switching I experience very little drift. Any help?"

Yes. To reduce frequency shift of the VFO-62 when using remote switching, remove the orange wire from pin #1 of the 6BH8 tube socket which goes to the function switch. Then reroute the orange wire around and to the outside of the 0B2 v.r. tube socket and solder to the cinch lug containing junction of R_4 and L_5. This breaks up the large closed loop around the coils which have a tendency to shift the

frequency of the unit when using function switch versus remote switching.

Increased Output from VFO-62—"Any way to get more r.f. output from the VFO-62? I do not wish to tear into the unit if I can help it."

Yes. See fig. 2. Connect a 4 μh choke or coil with a 3 to 30 mmf capacitor across it as shown. This coil-condenser combination may be either at the phone plug end of the cable or at the transmitter. The length of the coaxial cable *is* critical since it becomes a part of the tuned circuit. Usually two feet of cable is sufficient and should not be exceeded. If longer lengths of cable must be used, the coil-condenser combination must be reduced accordingly.

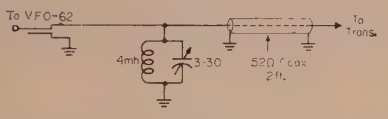


Fig. 2—Method of increasing voltage output from the National VFO-62, six and two meter v.f.o.

Tune the 30 mmf trimmer so that it resonates approximately in the center of the band or around 8.666 mc for 6 meters and around 8.111 mc for two meters. Under these conditions, the phone plug should be inserted in the PHONE jack on the back of the VFO-62 and connections should not be taken from the cathode follower output jack.

Thank you National for the assist!

TVI (yet?)—"What do you suggest that I read in order to acquaint myself with TVI, its causes, cures, etc.? I'm new at the ham game and I have been told by the neighbors that they can hear and 'see' me 'beautifully' when I am transmitting on 20 meters. Can you help me?"

I would suggest a copy of Phil Rand's TVI Handbook from *CQ* for $1.75 p.p. Harold R. Richman, W4CIZ has free copies of the booklet "A General Review of TVI Causes, Effects and Solutions." This is one of the best free aids I have yet seen. You can get a copy by writing to Harold at 1110 Lake Blvd., Annandale, Va., and enclose a 8 × 12″ stamped-self-addressed envelope. It is a terrific rundown on TVI and recommended by Washington's TVI Committee on TVI Aids.

Transistor Manual—GE's new *Transistor Manual* (6th Edition) is recommended reading for all who work with transistors. Really fellows this book is worth much, much more than the $2.00 asked for it. It contains all the information one needs, whether he be an engineer or ham experimenter. You can get one from your GE dealer or by writing the GE Company, Building 7, Electronics Park, Syracuse, N.Y. Don't forget to enclose two bucks.

RCA Application Note—For those of you interested in using Nuvistor tubes (and who isn't these days), RCA has an application bulletin number AN-194 which discusses "Temperature Ratings and Thermal Considerations for Nuvistor Tubes." You can get a free copy from your RCA Distributor or from the Electron Tube Division of RCA at Harrison, N.J.

The bulletin is must reading for the 6 or 2 meter man contemplating a Nuvistor converter or transmitter.

Multi-Tube Pin Straightener—When one has loose miniature tubes around they are bound to develop bent pins. Available from GE distributors is just the gadget to straighten out those pins. It covers five kinds of receiving tubes and costs only 60¢. The photo shows what it looks like.

The G.E. Multi-Tube pin straightener enables one tool to service any tube having miniature-tube-type pins.

32V-2 to 4015 kc, etc.—"Any suggestions for putting my 32V-2 on the MARS frequency of 4015 kc?"

Yes. Thanks to John C. Garcia, Jr. (DL4UV/K6VLC) see the scheme in fig. 3. A plug-in unit is constructed using a 6C4 tube to be plugged into the socket of the 6SJ7 oscillator tube. The dial on the transmitter is set at 4000 kc and perfect performance is obtained on 4015 kc.

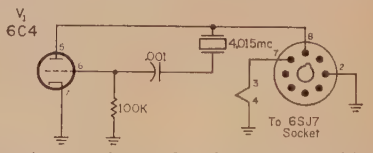


Fig. 3—Plug-in adapter for the 32V-2 enabling operation on 4015 kc for MARS. The 6SJ7 oscillator tube is removed and replaced with the plug-in circuit shown.

Heath Warrior HA-10—Writes Dee Stone, KØTOV, "many cures have been suggested for the impulse interference to receiving generated by some Warrior linears, including chokes, 3B28 rectifiers, *etc.* After much digging over a year's operation one of the causes has come to light.

"The plate transformer, 1700 volts each side of center tap has an electrostatic shield between its primary and secondary windings. Under the top transformer bell a short braided lead connects to this shield—the other end being laid on the top lamination to be held tight by the top cap. These surfaces have been dipped

in varnish, thus preventing a solid ground path for discharge of a static charge on the shield. A scorched appearance around the lead is definite proof. Placing this ground lead beneath the top lamination where there is no paint ended this noise problem with this particular Warrior. Before this correction, with the h.v. on and the rectifier caps off, the noise was worse than ever, probably due to the higher voltage when not under load."

Thank you Dee—we all appreciate your assistance!

V.F.O. Chirp—"After adding a 150 volt v.r. tube to the circuit supplying my v.f.o. and then keying the v.f.o., it seemed to put out more chirp than before. This chirp was peculiar inasmuch as it had a 'whoop-whoop' sound to it. I thought that the v.r. tube would regulate the voltage and thus lessen chirp, but I seemed to be wrong. Any hints on this situation?"

Yes. The VR-150 tube requires between 150 and 180 volts or so to fire it, after it fires above the regulation level (150 volts) it must settle down to the regulated voltage—this is where the 'whoop' comes in.

To eliminate this "hang-over," trv the scheme in figure 4.

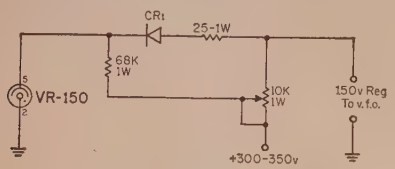


Fig. 4—Circuit providing clean, well regulated high voltage for v.f.o.'s Diode CR_1 is a Sarkes-Tarzian M-150 diode.

Radio (Experimental)—"Is it true that the FCC has added to its rules at some time or other for the experimental radio service a section providing for the granting of authorizations to students of seventh grade or higher level for the use of radio in school experiments and demonstrations? Where can I get information on this if true?"

Send 10¢ in coin (no stamps) to the Superintendent of Documents, Government Printing Office, Washington 25, D.C., and ask for a copy of Part 5 of the FCC rules. Changes may have been made since 1958, however, frequencies close to 460 mc and 2450 mc (and others) were once authorized for the service with a power limitation of 5 watts. Your high school or grade school instructor must fill out an application to take advantage of the authorization—if it still exists.

DX-60 Keying—"Although it does not happen all the time, when keying the DX-60 on 40 meters with straight through crystal controlled operation, I experience erratic or intermittent keying. All parts and connections check out fine. Any suggestions?"

Yes. First retune the 40 meter oscillator plate coil. It should be peaked for a peak grid current reading and then the slug should be tuned down into the coil approximately a turn and a half so as to get it off its peaked point. This will usually correct the keying problem you ask about. If you use 80 meter crystals for 40 meter operation you won't have to worry about retuning the plate coil. More info next month on the DX-60—watch for it.

HX-10 SSB Transmitter—"When operating the HX-10 on a.m. I note that no grid current is indicated. Is this normal?"

Yes! In the a.m. position the final is still operating in the linear mode—therefore, no grid current. Incidentally, some of the fellows who purchased the HX-10 are *not* reading their instruction manuals thoroughly, nor are they following the step-by-step tune-up instructions. Reports on the HX-10 so far (as received by this columnist) are excellent.

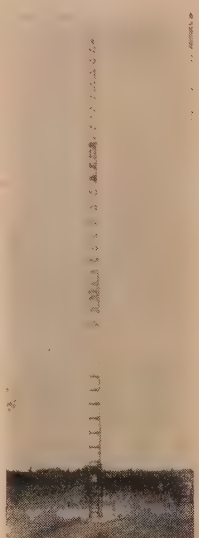
Thirty

When you read this I will have been retired from the Army Signal Corps after over 27 years of uninterrupted service. During this time I have made many friends all over the world—especially hams. As a career in a technical field, the Army is second to none! If you are a ham and are about to be drafted or are contemplating enlistment, by all means make the fact known that you are active in amateur radio—you'll find a warm welcome awaiting you . . . especially now that we have a Chief Signal Officer, Major General Earle F. Cook who is a real active radio amateur.

For this month then, 73 and 75 to all you fine readers and 72 to our many overseas friends.

Chuck, W4VZO

New Products



Rohn Crank-Up Tower

The Rohn No. 6 Tower is now available as a "crank-up" type in heights from 18 to 54 feet for amateurs who desire this type tower.

The tower features a sturdy winch and cable which lifts the various sections with ease and safety. Tower is available in heights of 18, 26, 37 and 54 feet. It is completely hot dipped galvanized and features all the advantages of the non-crank-up Rohn No. 6 Tower. Guying is necessary.

For more details circle A on page 126.

The USA-CA Program

BY CLIF EVANS*, K6BX

NINE lucky USA-CA-500 winners were added to the growing list during the past month. Letters continue to flow in from those who have received their USA-CA certificates which are monumental tribute to the award's unusual beauty and value significance. It is unique, within our experience, that folks have been so struck with the colorful beauty of the USA-CA that they are actually awed with lack of words to express themselves. The whole accepted response appears to be, here is the award that demands center and honor position for display in the ham shack The OLD MAN is highly pleased that he had a major part in helping bring hamdom the USA-CA awards program which along with CHC, has revolutionized hamdom's hobby pursuits and added a thousand-fold more avenues of hobby pleasures.

Those of you who are missing the boat might well refer back to July issue for the full-page picture of the USA-CA, which, if you will just imagine all the individual state flags and *Old Glory* in full color . . . might be further interested to check May issue for full USA-CA rules . . . and get in the swim.

New USA-CA-500 winners since last issue:

USA-CA-500

W3KDP	100	K4BVD	105
W5DJB	101	G3DO	106
W7VJI	102	W2EMW	107
W8UMR	103	K1KPS	108
W1EQ	104		

NOTE: all the above were for Mixed operations except W8UMR and G3DO endorsed for All Phone.

South Carolina Joins USA-CA In Big Way

South Carolina is being put on the USA-CA map in a big way these days. We first announced in May issue that the Greer Amateur Radio Club, Greer, South Carolina was sponsoring an 'all county' award for working twenty five of the Palmetto state's counties, with seal endorsements for thirty-five and forty-six counties respectively. That was only half the story; we bring the rest here.

This issue we bring you both a picture of the beautiful South Carolina award and a picture of the Governor of South Carolina, Ernest 'Fritz' Hollings, signing award number One which went to John Thomas Laney, first out-of-state amateur to win the award. At same sitting the governor

Here is the colorful Worked South Carolina Counties award sponsored by the Greer Amateur Radio Club for working 25, 35 or 46 South Carolina counties. The award is signed by the Governor of South Carolina. See story in text.

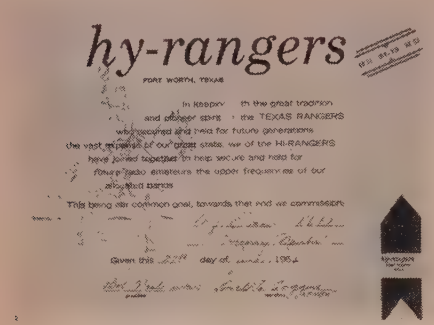
signed awards for W4MTK, W4DPN, W4UJB and K4FPF. The multiple color awards have attractive green, black, grey border in scroll, with center background in faint green, state and county outline map in heavy green, and with black print. Two inch gold seals bearing the official seal of South Carolina carry red, white and blue ribbons. All South Carolina county awards will carry Governor Hollings' signature.

The OLD MAN would like to take time out right now to say *here* is a prime example of what can be done to produce a high-level awards program within the USA-CA program, which promotes a state, its people, its counties, its cities and towns, and in doing so, generates better community and official recognition of amateur radio activities. Many awards just promote a few members; this is an example of an award sponsored by a small ham club that reaches the jack pot in public relations in world-wide publicity for all the citizens of the Palmetto state of South Carolina, already rich in traditions and history. We are proud of the little part we played in helping the live-wire Greer Amateur Radio Club come up with a *winner.*

The South Carolina County award follows all USA-CA rules for identity, operation, application, endorsements etc. Seals for additional counties will be issued upon application accompanied by a s.a.s.e. or one IRC. Application forms listing all South Carolina counties are recommended for use and are available from the club for s.a.s.e. or one IRC. Address: Greer Amateur Radio Club, Route #3, Greer, South Carolina. When you send

Pictured here is handsome Ernest 'Fritz' Hollings, Governor of South Carolina, sitting at his desk in Columbia, signing the first Worked South Carolina Counties awards. The Governor will sign all such awards issued which are sponsored by the Greer Amateur Radio Club. The happy fellow just behind the Governor is smiling Joe Forrester, K4SFW, who has been the spark plug behind creation of the South Carolina counties award program. Other club members, left to right, are; Jim Talbert, W4UCR and Elmer Wilson, W4RPP. See text for full story.

to the club for the award, ask them to send you the "Nothin'-could-be--finah-than-to-*see*-South-Carolina" colorful brochure. It is a jewel!



Above is the Hy-rangers honorary membership certificate issued by the Hy-rangers of Fort Worth, Texas, for working six members on 50 mc or above. No charge. The OLD MAN particularly singled out this certificate because, much more than just working members of the club is promoted. Pictured on the left hand side of the certificate in light green and difficult to bring out in picture, is a cowboy saluting with his sombrero. The OLD MAN fully subscribes to the HI-RANGER's goals and is proud to be a honorary member . . . let's all be Hy-rangers.

'Rare' Counties on Field Day

Interest in USA-CA insures that stations that head for 'rare' counties on Field Days and otherwise, experience pileups never before dreamed of for such activity. That is, *if* you get advance publicity, as you should, and every one is on the hunt for you.

An example of the hamming fun one can have in addition to camping out in the wilds is demonstrated by the Friendly Amateur Radio Transmitting Society, who, during last Field Day, headed to Forest County, Pa., which primarily is a heavily wooded and mountainous area really in the wilds. Using the call W3LMM/3, the club racked up a pile-up score of 826 contacts of which 558 were on c.w. and 268 on phone, representing besides local contacts, 25 countries in all 6 continents, and all this in a total operating time of 19 hours.

Members who had the time of their lives on this trip were W3AOH, K3DKD, W3LMM, W3MVQ, W3QJJ, W3UHN, W3VKD, W3WGH and K2ZMA. A letter from Bill, W3LMM, tells of setting up the shack in a cabin on top of a 100' fire lookout tower on the highest mountain with a view for miles around. Bill tells of the many deer seen and how bears raided their food during the night and how they finally solved this problem (they slept in tents) by locking the food in car trunks. To add to the excitement, several lightning and rain, thunder storms threatened continued operations. While total operating time was 19 hours, they managed to keep 4 transmitters going for an actual 67 hours transmitter time. One engineering feat they accomplished was *suspending* a 10, 15, 20 meter beam in mid air at an 85' level between two pine trees and end up with it parallel to the ground and controlable . . . think that this is a new one for the books.

Bill's letter was one expressing astonishment of their phenominal number of contacts; as Bill said, they only had 500 cards printed up but are having the additional printed up and all contacted will get cards for sure. Bill says the gang is so enthusiastic about the fun had this year they plan to go back next year's Field Day with goal to work 1000 stations . . . and we just bet they will know that they have the lay of the land and have licked some difficult multiple antenna installations . . . wonder who climbed those pine trees?

We have been corresponding with this live wire group in connection with their club taking over sponsorship of the Penna. All County Award and, of course, rewriting the rules in more conformity to fit the USA-CA Program. This idea is still cooking and we will tell you more about it at a later date.

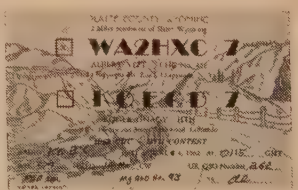
'Rare' Counties During Contests

Like the OLD MAN keeps telling you, if you really want to enjoy pileups during just *any* Contest or Field Day, don't stick around the heavily ham populated home site, but head for the hills and pick a 'rare' county. And of course if you want to do it up brown, have some special QSL cards printed up for the occasion like WA2HXC/7 and KØECD/7 did when they headed for 'rare' Platte County, Wyoming, during the CHC annual QSO party. See picture.

Took Roger and Al a four hour drive from home QTH at University of Colorado to reach a wilderness camp about two miles Southwest of Slater, Wyoming, and another three hours setting up their tents.

Al says, "Don't think I have ever experienced a pileup like this before. Now I know how a rare DX station must feel when dozens of stations are calling all at once. Seemed just everyone needed either Wyoming or Platte County. The Wyoming wind played havoc with everything but we managed to hold on 'til the last when the tent came down on top of everything just ten minutes after the contest was over. Never had so much fun, and you can bet that from now on I'm heading for the 'rare' counties during any Contest or Field Day."

As we stated before, will be glad to mention any expeditions to rare counties in this column, but remember, we close-out the column by 3rd of the month to meet a 60-day deadline; however, as many know, the OLD MAN holds a CHC News sked every Sunday at 2200 GMT, on 14075 kc, and we pass out hot tips to thousands who monitor the frequency.



Here is the special rare Platte County, Wyoming, QSL used by WA2HXC/7 and KØECD/7, during annual CHC QSO Party. See text for story.

Amigos De Albuquerque

CHC Chapter #1, Albuquerque announces discontinuance of the Sandia Base Friendship award and are sponsoring as its replacement the Amigos De Albuquerque award. Requirements are for working 25 stations in the Greater Albuquerque area

Above is the new Amigos De Albuquerque award sponsored by the CHC Chapter #1, Albuquerque, for working 25 stations in the Greater Albuquerque Area, New Mexico. The 8½" × 11" award has gold borders and background. See text.

for U.S. stations and 10 by DX stations. A v.h.f. class requires local stations to work 10, rest of U.S. work 5 and DX stations only 3. The gold award is issued in five classes for mixed, all c.w., all a.m., all s.s.b. and v.h.f. Apply with certified list, signed by two other amateurs or a radio club official signifying QSLs sighted, with fee of $1, to CHC Chapter #1, c/o John C. Kanode, K5UYF, 408½ Cornell Drive, S.E., Albuquerque, New Mexico.

The Albuquerque CHC Chapter also sponsors the Worked New Mexico Counties Award. See November 1961 issue. The Chapter also sponsors the Annual New Mexico QSO Party which is announced well in advance in ham journals.

The OLD MAN's Brand of Free Press

We frequently have been asked several related questions as to whether our bombastic editorializing in this column represents *CQ* policy, and if we are not afraid of opposition and retalliation. Possibly we should have made our position clear from the beginning.

First, we publish two international in scope News Letters of our own, and our thousands of readers fully understand that we fight for and promote a greater free press in hamdom's journals. In our two News Letters we pull no punches and if others refuse to show both sides of the controversial coin, then our pages are available for the opposite side of any debate, controversial or otherwise. We do not avoid controversy . . . we seek and spot light controversial issues in order that several sides of each question are presented and more intelligent opinions may be generated. This is the workings of a free press. We do not seek to please everyone, but we do seek to provoke all our readers to think for themselves.

With the above philosophy of a free press, our principles deny that we could sell our journalistic pen to any person or publication, and you can be sure, any time you see the OLD MAN's name and call bannered on the staff of *CQ* or any other magazine, it was with full understanding that whatever the OLD MAN editorialized about (and got published), was his opinions alone and uninfluenced by whatever policies endorsed by such publication.

We stated this position when we joined *CQ* staff with normal understanding that the Editor had management right to blue-pencil copy as he saw fit. We have not asked *CQ* what is their policy; although as a trained graduate journalist we can and have interpreted what we believe is a guiding policy based on factual necessities of circulation and paid ads for survival of a free press not supported by any membership dues or other such remunerations. In any event, unless *CQ* Editor has already expressed a policy in ZERO BIAS, you can be sure whatever we write is written without consultation with *CQ*, and the first time *CQ* knows what is being submitted is when it shows up in the mails.

A free press operates by objective reporting of truths rather than half-truths, omissions or propaganda slanted to deceive and brainwash. A free press cannot be throttled by threats as some have found out; it cannot be retaliated against, because of the very fact that so long as it objectively sticks to facts and truths, any attacks based on other than truths, also would be unmasked. Hamdom urgently needs more free press and less highly selected news supporting selfish policies and goals. Hamdom can have a free press if awakened to the fact that such a free press is our *one and only* guardian to protect hamdom's majority interests.

U.S. Hamdom Hits the Jackpot!

From the beginning U.S. hams have been pouring tens of thousands of our hard earned bucks needlessly down a stupid rat hole . . . but those days are over; U.S. hamdom hit the jackpot when the Continental QSO Club, Inc., was formed and announced in *CQ* this issue. See paid ad.

For $3.00 a year you can join the Continental QSL Club, Inc., and start immediately bulk mailing your QSLs to the club. As a club member you are entitled to *unlimited use* of the club's *Free automated* QSL mailing service. Membership is open to hams and s.w.l.s in all fifty states and all Canadian provinces.

Just think of your annual savings in handling your own cards, and better yet, think of the increased *returns* you can expect. Now, one can enter contests and QSO parties making hundreds of stateside contacts, yet have those cards delivered anywhere in the U.S. and Canada, *free*

[*Continued on page 94*]

This is the Worked All New Hampshire, WNH, counties award sponsored by the Concord Brasspounders for working all ten of New Hampshires' counties after October 8, 1949. Portables and mobiles do not count. Apply with QSLs and list (no charge) to W1AOQ, Gilman K. Crowell, RFD #2, Stickney Hill, Concord, N.H.

BY WALTER G. BURDINE, W8ZCV
R.F.D. 3, WAYNESVILLE, OHIO

Novice

I AM very pleased with the quality and quantity of material sent in this month. I am reassured by the mail I receive suggesting topics to be covered in the column. Your suggestions help form the contents for NOVICE; it is your colunm, you know. You can use these pages to disseminate information on any subject of interest to the Novice or Technician. The scope of information covered by these licenses are common to all phases of amateur radio.

I want to thank every one of you that has taken the time to write during the long hot summer, especially those outside our country that have filled their letters with reports and ideas for the column. I would like to know the rules and regulations in your country and whether or not there is a license fee. If so, how much and to whom is it payable? Again, thanks to one and all.

As you can see, this column is beginning to take on the aspects of an international sounding board and in this way we can build friendships, and mutual understanding. Governor DiSalle of Ohio proclaimed June 17 to 25 as Amateur Radio Week. This is a fine way that we can get the public to understand the role of the amateur a little better. Our thanks to Governor DiSalle and all of the Governors that have helped the amateurs in a like way. Lets all try to live up to their hopes.

Net Information

If you have a net going in your community, write all of the information in a letter to me and I will print it in the column for all to read. You can reach a large audience through the pages of *CQ*.

The Brass Pounders Net (BPN) tunes between 3700 and 3720 on Sunday at 2:00 P.M. CST (2000 GMT). Newcomers to the net are requested to wait for the sign QNI before calling in. The purpose of the net is to get Novices together for a c.w. roundtable for the purpose of getting that elusive 13 per.

OOPS—Gremlin Dept. Calling

The printers devil apparently was having lots of fun in NOVICE for April. On page 66 in the diagram for the 15 meter converter, the pin numbers for the screen grid and the control grid are reversed. The control grid is pin number 2 and the screen grid is number 3. Please make that correction in your copy of the diagram. Thanks to George L. Rhoads, K8QBF, Route 2, Box 249, St. Albans, West Virginia whose letter we print below. "I enjoy my copy of the converter and by using the bandspread 3.5 to 4.0 mc band on the HRO-60, I have plenty of bandspread. I use a 17.5 mc crystal for the oscillator and that gives me the right i.f. to tune on the HRO-60. I use the 6AK5 i.f. amplifier model."

A Ham's Science Project

Many of the letters that come to me say, "I saw my first amateur station at our local Science Fair put on by the school." I've attended some of these science fairs and I'm amazed at the knowledge that lots of our young folks have of many branches of science. I'm afraid that we hams lean toward the electronic exhibits but you should see them and to get a new set of values on our junior citizens. I'm proud of them. I asked Harry Richards, Jr., WA8AUQ to tell us of his first-prize-winning project on Space Electronics; read on and see that is wasn't easy.

"Dear Uncle Walt: Here is the picture and summary of my science project. All diagrams are drawn on the display board along with actual pictures as received from Tiros. The inside of the model satellite is shown for all to see. There are nine transistor units in the model and all operate and are complete in themselves, batteries and all.

"The first circuit is the temperature indicator using a thermistor.

This is the way to cop first prize at a Science Fair. Know your project well, make it understandable to yourself and everyone present and do a good job of building. The Space Electronics exhibit of Harry Richards, Jr., WN8AUQ/WA8AUQ, Dayton, Ohio did just that. Harry is working at the Philmont Boy Scout Ranch in New Mexico this summer.

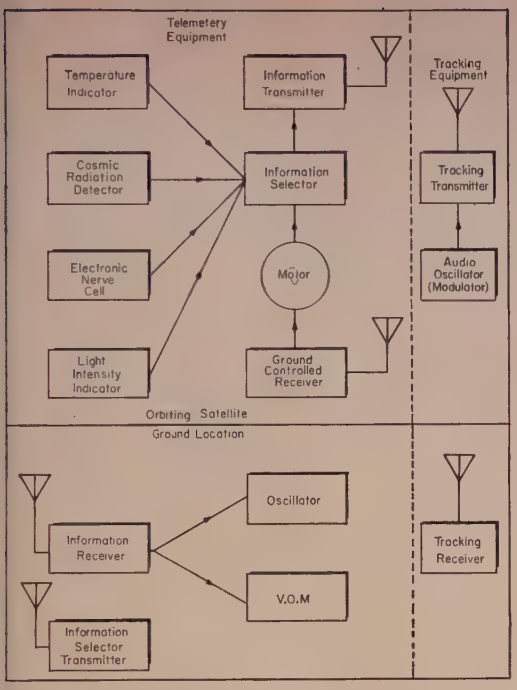


Fig. 1—Block diagram of WA8AUQ's science project. All the units are selfpowered. Good newspaper publicity and a trip to Detroit were part of the award as well as a cash grant of $75 (used to purchase a 6 meter rig).

"The second circuit is a radiation detection device which consists of a geiger tube and amplifier. This is used primarily for the detection of cosmic radiations.

"The third circuit is an electronic nerve cell used to indicate the pressures within the satellite.

"The fourth circuit is a receiver. When a signal is received it actuates a motor and this motor drives the information selector.

"The fifth circuit is the information selector, which makes and breaks the circuits between the different information gathering circuits and the information transmitter.

"The information transmitter sends the information to the ground control system.

"The seventh circuit is an oscillator that modulates the tracking transmitter.

"The eighth circuit is the tracking transmitter that makes it possible to track the satellite in orbit.

"The ninth circuit is a light intensity indicator composed of a photocell and a two transistor amplifying circuit.

"A block diagram is shown on the display board (and in fig. 1).

"This project covered every form of pulse modulation used in our satellites. These are pulse position, pulse width, pulse frequency, pulse amplitude and pulse code modulation. The operation is very simple. The output of each of the circuits controls the carrier of the information transmitter giving a type of pulse modulation. The receiver output (ground control) is connected in parallel with an oscilloscope and a v.o.m. The scope shows the amplitude of the received signal and the v.o.m. gives a numerical value to the signal.

Harry, I put this letter in the column because so many of the fellows and gals wonder why they can't seem to win when they start on a project about a week or two before show time. This is also why too many fail to learn the code and get a license. To get anything in this world now requires a lot of hard work; but it is worth it. Edison was right when he said, "Success is 99% perspiration and 1% inspiration." If you are having trouble with your license, apply that formula and see how it turns out.

Gadgets for the Hamshack

How many times have you wished that you had a simple method of checking to see if a circuit was oscillating. The simple gadget shown in fig. 2 will determine if a circuit is oscillating at any r.f. frequency. It does not have to be tuned as does the grid-dip oscillator. To use the

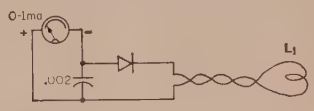


Fig. 2—A simple r.f. indicator can be made as shown above. Inductor L_1 is 2 turns of hookup wire with the leads twisted right up to the meter.

instrument, just hold the coil near a circuit and if it is oscillating, the meter will indicate the relative strength of the r.f. output. I actually use this unit more than I use my grid-dip meter. To tune up a transmitter or converter, just hold the pick-up loop of the meter near a coil and tune the output for maximum indication. Be sure that the signal is at the right frequency as shown by a grid-dip oscillator.

The diagram gives all of the necessary construction details. If the meter reads downward just reverse the diode's polarity. After using this for a while you will never be without it again; I wouldn't. Meters of more or less sensitivity can be used. I have used a 200 microamp and also a 5 milli-amp meter at times. The easiest way to wind the coil is to wind a turn or two of hook-up wire around a form of the size that you choose and twist the remainder tightly to extend the coil from the meter. I just hold the meter itself and place the coil into the desired spot.

Code Oscillators

To learn the code you will need a code oscillator. You can buy a kit or if you like to build and have a well stocked junk box, you can use one of the following circuits. The use of tubes for audio oscillators is passé with transistors being so small and cheap. Transistors are also useful for operation away from power lines as they use such small amounts of power that a small battery will operate the oscillator for a long period of time. Transistors for use in audio oscillators can be bought for

less than a dollar. The complete unit can be built in a very small space, complete with power supply. The unit in fig. 3 is used for a number of tests requiring an audio source. It was built for group code practice and was plugged into the input of a tape recorder to provide plenty of volume. The size was only 1½ by 2 by 2½ inches, complete with battery. The components, as shown, gave a 1,200 cycle note.

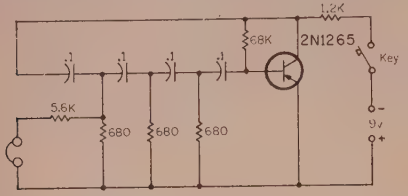


Fig. 3—A transistorized audio oscillator suitable for code practice. The resistors are all of one half watt, ± 20 per cent.

The oscillator shown in fig. 4 is completely self-contained. It is small enough to carry to work with you and use those few minutes at noon to practice instead of wasting time playing cards. I know several people that have learned the code by using a half hour at lunch time to practice. Paul Crowell, W8WXG, has been teaching code at the Dayton A.F. Depot, Dayton, Ohio during the lunch hour and has

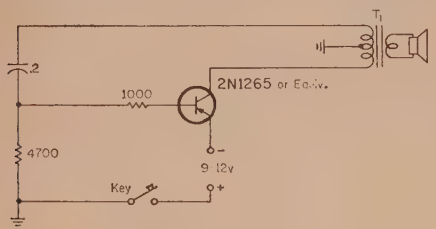


Fig. 4—Circuit of self contained code practice oscillator powerful enough to drive a loudspeaker. Transformer T_1 is a standard transistor type push-pull output unit. A small speaker may be included in the housing. To shift the oscillator frequency change the value of the 4,700 ohm resistor.

had very good results. He has trained about a hundred hams in his spare time. Naturally he is well liked locally; why shouldn't he be? This oscillator has enough volume to operate a speaker and still is small enough to carry in your coat pocket. A small 2½ inch speaker can be fitted along with the complete unit into a 2×3×5¼ inch Mini-box. The transformer is one of those 79 cent jobs as offered by most of the electronic parts supply houses.

Crystal Check Oscillator

A very useful piece of equipment on the work bench is a multi-purpose oscillator shown in fig. 5. I have used this unit to make c.w. contacts with local amateurs by plugging a crystal in the 6C4 section, connecting an antenna to the output receptacle and keying the cathode of the 6C4. A tuned circuit between

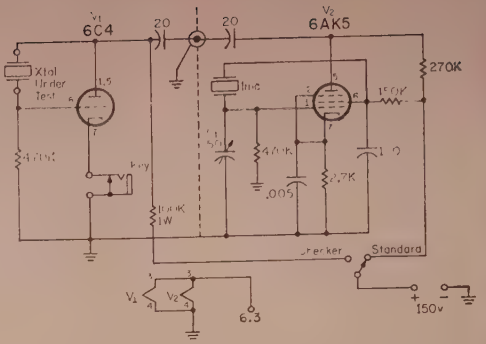


Fig. 5—Circuit of a combined crystal checker and secondary frequency standard. Its many uses are described in the text.

the output and ground would help suppress harmonics. The unit can be used as an oscillator to align the receiver, check band edges of the amateur bands, as a spotter signal for stations and as a secondary standard by beating the signal against that of known frequency, such as CHU or WWV.

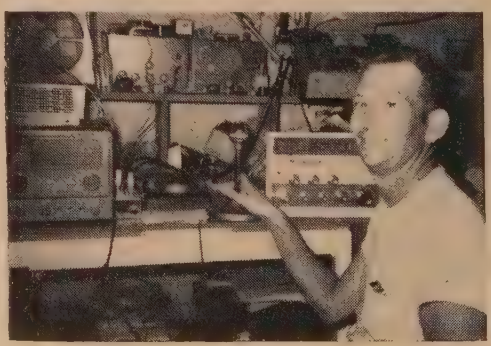
All amateur bands can be spotted by using a 1 mc crystal in the 6AK6 oscillator after the crystal has been adjusted to zero-beat with WWV. The band-spread dial can be depended upon to track fairly close on each amateur band after it has been set with the oscillator. The variable capacitor C_1 can be used to zero-beat WWV so that you are sure of your frequency.

Letters

A letter from Jonathan F. Gentry, RSGB-A2019, ISWL-G-9987, Gailey Vicarage, Stafford, England says: "Dear Walt: Since January I have had much enjoyment fro n your *CQ* NOVICE COLUMN. I am, however, one of the s.w.l. variety, the nearest Britons get to being a Novice, hi.

"Meanwhile I have become an associate member of R.S.G.B. in 1959. I joined the I.S.W.L. in January of 1962, I now have a QSL and a QSL Bureau.

"Main listing activity is on 21 mc a.m. and all statios logged for over 15 minutes gets a QSL card. Sometimes the periods is less when it is a new country giving a vain CQ. Since I only started sending cards



That good 2 meter signal from Clarksville, Ohio comes from Delbert Wright, WN8AZZ. The transmitter is a Seneca feeding a 10/10 beam up 64 feet. The receiver is a National NC-98 fed by an Ameco Converter, Delbert has had 474 two meter QSOs since February 1.

in April, mainly via bureaus, returns are small as yet since immediate airmail response is not in every station's QSL plan. I am very pleased with the returns so far. Usual policy for USA will be airmail direct for all new states and a few other stations but mainly surface mail whenever possible. So far, USA returns are 100%; lets keep it that way. Other activities aimed at getting my ticket by 1964.

"After this years exams are over I will start on the code study and you can be sure that all Novice bands will be monitored and all Novice stations QSLed, perhaps giving someone their first DX QSL. I hope replies will flood in since 500-USA-CA is the aim before we get the ticket. Pen-pals and s.w.l. cards are welcome and I collect cards as well. 73 and good DX to all of your readers. Jonathan."

Don't you think you could get some ideas from this letter from Walter Marble, WA4AQV, 1305 Monte Vista Drive, Gadsden, Alabama? Read on, friend, go ye and do likewise.

"Dear Walt: I just thought I'd drop you a line and at the same time wish you luck with the column.

"My rig consists of a DX-20 and a Hammarlund Super-Pro SP-400-X hearing aid. The antennas are: a vertical and an 80-40 meter dipole. I have ordered a beam and tower and will probably have them in a few weeks. I will also have my General by the time this gets in *CQ*.

"I have had about 450 QSOs to date. I read with interest the letter of Bill, WN9AEA, referring to working a boat with the call SOSC. No one is pulling his leg. I worked a similar boat on December 24, 1961 at about 2305 CST. His call was HOSC and the QSO was on 21.150 kc. I called him and he came back. I had 569 and he had a very good 599, no QRM whatsoever. Andy, I believe his handle was, said he was on a ship about 30 miles off the coast of Mexico in international waters. We had a good ragchew and he wanted me to handle some traffic to New York. He said he would QSL, but no luck on both sides.

"I think I will be an award hunter. It seems like an interesting project. So far I have RCC and CP-20. When I get my General, I will be on the air with and Eldico TR-1TV transmitter, about 300 watts input, and a D-104 mike. I would like a sked with Wyoming. 73, Walt, WA4AQV."

Rolf Rasp, P.O. Box 51, Rio de Janeiro, Brazil sends this newsy letter: "Hello KNs and WNs: I am afraid that the Novice stations I have reported on 80 meters did not receive my cards, which have all been sent through the LABRE. Nowadays I send my cards via air mail to the respective district bureau in the USA. I would like to hear from someone who could tell me how to mail QSLs to those stations that are not OK in the call-book.

"The stations reported via bureau on 3.7 mc were: KN1RQP, KN3OSE, KN3OVI, KN3PIE, KN4NPB, KN4NVO, WN4IEJ, WN4BFH, WN4BBG, WN4AOI/4, KN5HMV, KN5JZD, WN5DFP, KN7OYI, KN7OED, KN8ZUB, KN8WDT, KN8ZAF, KN8ABD, KN9FHV, KN9DXG, KN9QSO, KNØGSY, KNØHFU, KnØCVU, KNØIOK, KNØDVP, KNØBAJ.

"The stations heard lately and to which cards have been sent to the district QSL bureaus are: WN1TTA, WV2FRO, WV2TLB, WN6WXP, WN8CKB and WN9BRB. The only novice card I have received was from KN7QBI on 80 meter c.w.

"I have heard at least a hundred Novices here in Brazil since 1960 but was unable to get their complete calls and QTH because of my poor receiver, which had no noise limiter or crystal filter and only a very simple converter. I now have an SX-71 with all of these features. A tape-recorder helps with some of the hard-to-copy stations. I can now set solid copy on almost every Novice heard. You Novices need not think that because you are QRP, you can not work DX. Often I heard more Novice stations than Generals. The best example for 80 meter QRP DX is the QSL from HA3KGC who was heard here with a 569 report when he was using only 10 watts.

"Dear Walt: I am nearly 13 years old and have been licensed 6 months. I received my Novice ticket on December 1, 1961. My standing now is 50 states with all confirmed. I worked 47 as a Novice and then on April 14, I took the conditional exam and I passed it. I received WA4EAS on May 4th and worked the remaining states, Alaska, Wyoming and Vermont on 20 meters. I have also worked UA1, DJ2, PAØ, G3, KV4, TI2, HK7, YV5, KP4, KG1, KH6, and KL7.

"My rig here consists of a Viking II running around 120 watts now and about 70 watts as a Novice. My receiver is an HQ-129-X with a long wire antenna on 40 and 20 meters and a ground-plane on 15 while I was a Novice. I also used a homebrew 807 rig running 25 watts that Dad and I built.

"I belong to an almost all ham family. Dad is W4OVU, Mom is W4UPT, but my 15 year old sister is not interested in ham radio.

"I read your column every month and have been digging out some of Dad's old *CQ*s to read, too.

"I will soon be moving to St. Louis, Mo. so I guess I'll be a Ø before long. 73, Hal, WA4EAS, 825 N. Main, McKenzie, Tenn."

Congratulations, Hal, I am just wondering about the age of the youngest holder of the WAS award. I'll bet you are coming in close on the race. I'm sure a lot of we older folks would be glad to do as well as you have done so far and I hope you keep up the good work. Your record speaks for itself and doesn't need any comment. Let us know how you do in Ø land.

I asked for ideas for future columns and George Holden, VE7BBS, 214 Howe Street, Victoria, British Columbia came at us with this note. Ideas did you say?

"Dear Walt: Could you include in one of your FB articles this business of borrowing power from the receiver. I have come across this many times, and feel this information would help many hams. I'm thinking of borrowing power from my receiver for a project that I have.

"How about some information on measuring techniques, a.c., d.c. and r.f., in detail. Some information on matching impedances of the line and antenna, some on using a grid-dip oscillator and the use of the field strength meter, all of interest to the newcomer. Could you use these ideas for future articles? I'm sure we would appreciate them; after all we are not all oldtimers.

"I received my ticket in October 1961 and have had 174 QSOs for a WAS of 30/23 using a DX-60, an SX-110 and a Gotham V-80 only 5 inches off the ground. I was a member of the Canadian Army for 14 years. Thanks and 73, George."

Thanks George, it just goes to show that after using an idea for a number of years, you think that everyone should know all about that idea. On the idea of "borrowing power from the receiver," actually it means just plain old stealing the power from the receiver's power supply that usually is already loaded down pretty heavily by its own power requirements. Stealing the power from the receiver only adds to the load of the receiver's power supply. I do not recommend this practice. A power supply for your additional power requirements is cheaper than the possibility of having to replace the receiver power transformer if it should happen to burn out because of the additional load of the accessory's power load.

Help Wanted

Christopher S. Thomas, WA6HTJ, Telephone—NO 4-4011, 2515 North Vermont Avenue, Los Angeles, 27, California offers to help anyone to get the rig going right or with any ham problems in keeping down harmonic radiation. If you are having trouble that you have made an honest effort to cure and you can't locate the trouble give Chris a call and take his advice in curing the trouble. Thanks Chris, we need more like you.

Many hams could use help for a number of reasons; will you offer to help?

Jeff Wayne (13) Phone: AT-8-1720, 24 Spring Garden Street, Hamden, Connecticut has his Novice, but needs help with the General.

Steven Fullbright, P.O. Box 488, Conroe, Texas needs someone to help him and a local ham to give the test.

[*Continued on page 111*]

RTTY

BYRON H. KRETZMAN, W2JTP
431 WOODBURY ROAD,
HUNTINGTON, NEW YORK

RTTY Operating Frequencies

Nets centered on frequencies given; operation usually ± 10 kc.

80 meters	3620 kc
40 meters	7040 kc
20 meters	14,090 kc
15 meters	21,090 kc
6 meters	52.6 mc

BACK in the June '62 RTTY COLUMN in *CQ* we described in general the surplus AN/URA series of radioteletype receiving converters. In particular we described the AN/URA-8A, an audio-type of converter which operates directly from the audio output terminals of the receiver. For the benefit of those who don't have the June RTTY COLUMN handy, the other two groups of the AN/URA series are of the i.f. type, which means that usually the station receiver must be modified to bring the i.f. output out to a connector of some kind so that it can be fed to the converter. "Horrors, that will ruin its resale value! Besides, I'm scared to dig into the receiver." Is that what you say? Nuts, say I. More about this later.

The AN/URA-6A and AN/URA-7A Groups

To repeat ourselves ever so slightly, the AN/URA-6A, or -7A, is a dual diversity "Frequency Shift Comparator Group" consisting of two converters and a Comparator, a combining unit. The two converters can be used independently, which is fortunate as dual diversity is only occasionally used in amateur RTTY. Both converters are almost identical. The difference is that the CV-57/URR converter of the -6A group operates from any i.f. between 395 and 470 kc while the CV-71/URR converter of the -7A group operates from an i.f. between 47.5 and 52.5 kc. The same Comparator, identified as CM-14/URR, is used with both groups, and has a self-contained make-break audio oscillator that is keyed by the combined received signal. It also has the electronic keyer or switch tubes in the output circuit to operate a teleprinter. These tubes get their plate voltage from an external 120 volt d.c. loop supply rectifier, which is a required accessory. Each of the two converters in either group has the same type of audio and d.c. output circuits so that they can conveniently be operated alone, on separate radio channels, without the Comparator.

The Circuit

Figure 1 is a block diagram of either the CV-57/URR or the CV-71/URR converter. Construction is modular, with plug-in units that may readily be changed by a service technician. Both converters look alike, inside and out. The only difference is that the "Input Units" are different, one being designed for the high i.f. and the other for the low i.f. The Input Unit, as you probably have guessed, is a frequency conversion unit, such as in a superhet receiver, that changes the input frequency to the frequency of the "I-F Unit." The oscillator in the Input Unit has connected across it an Automatic Frequency Control (AFC) circuit controlled from the discriminator in the I-F unit.

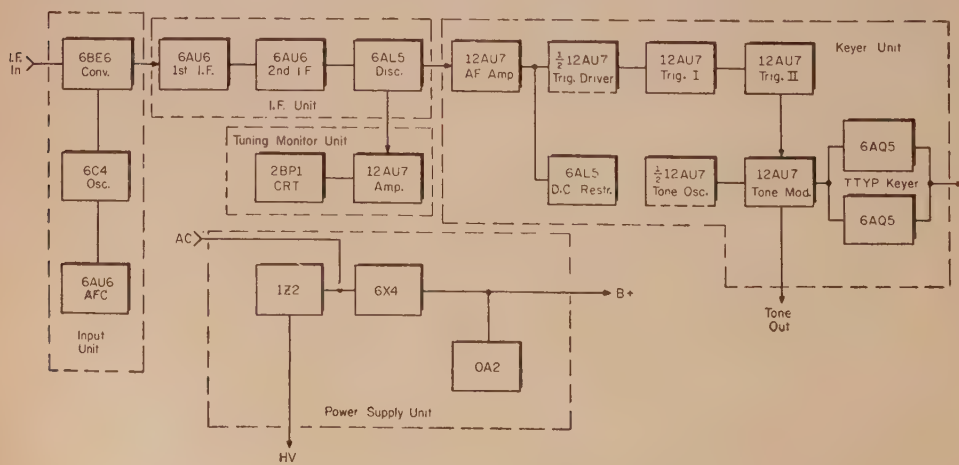


Fig. 1—AN/URA-6 and AN/URA-7 Block Diagram

The I-F Unit operates on 40 kc and has a selectivity switch to permit the operator to set up the converter for the usual wide shift of 850 cycles, actually any value of wide shift from 200 to 1000 cycles, or for any value of narrow shift from 10 to 200 cycles.

The "Keyer Unit," which includes both the keyed tone oscillator and the d.c. output circuit, is an a.c. coupled amplifier with triggering circuits and an "axis restorer" circuit that prevents small drifts in radio frequency from causing telegraph bias distortion. The tone oscillator has a switch which permits the selection of 595, 765, 1105, 1445, 1615, or 1785 cycles. When used by the military, this keyed tone was piped over land lines or v.h.f. to the signal center where the teleprinter machines were located.

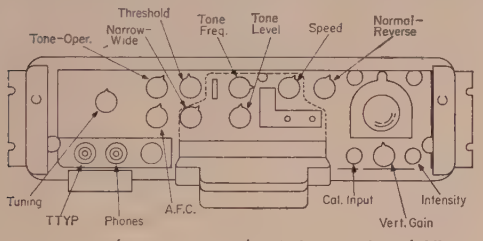


Fig. 2—AN/URA-6 or AN/URA-7 Front Panel View

Figure 2 is a front panel view of either of the two converters. Referring also to Figure 1, the Block Diagram, the TUNING control permits a small variation of the 6C4 oscillator frequency in the Input Unit. The AFC switch is used to ground out this circuit, and the NARROW-WIDE switch sets the bandwidth for the shift being received. The TUNE-OPER. switch puts both output circuits on *mark* while the signal is being tuned in. The THRESHOLD control sets the operating level in the keyer unit. The TONE FREQ. and TONE LEVEL controls are for the make-break oscillator. Time constants are set by the SPEED switch, SLOW for radioteletype and FAST for facsimile or high speed morse. The NORMAL-REVERSE switch allows correction for a turn-over of *mark* and *space*. The usual 'scope controls are provided for the Tuning Monitor Unit. This has a 2" 'scope that is vertically deflected by the discriminator load d.c. voltage as a tuning indicator. A push button marked CAL. IN helps to set the VERT. GAIN at the proper level. Jacks are also provided, TTYP for the d.c. output loop, and PHONES for the output of the keyed audio oscillator.

The CV-57/URR Converter

As we said, this converter will operate from any i.f. between 395 and 470 kc, which is fine for those receivers with the usual 455 kc i.f. The input impedance of the CV-57/URR is 70 ohms unbalanced, and an input signal of 2500 microvolts to 0.5 volts is required. This converter was supplied with a Receiver Coupling Kit, Type 10563, which was to be installed in the associated receiver, such as the Navy RBB, RBC, or RDM. This consisted of a cathode follower and a low-pass filter to provide a low impedance line from the receiver last i.f. amplifier plate circuit to the converter.

Modification of an amateur band receiver to get out the i.f. from the last i.f. stage could consist of an out-rigger cathode follower with its grid circuit coupled to the plate of the tube via a small coupling capacitor with its lead twisted around the plate pin. Another approach, which we believe is simpler and better, is to remove the last i.f. transformer of the receiver and to scramble-wind a link of about 20 turns of #26 enamelled wire near the plate coil. Ground one side of the link and bring the other side out with shielded wire or coax to a phono jack on the rear of chassis.

The CV-71/URR Converter

The converter will operate from an input frequency of 47.5 to 52.5 kc, which is ideal for those Hallicrafter and Drake receivers that have a 50 kc i.f. The input impedance of the CV-71/URR is 910 ohms unbalanced, and an input signal of 2500 microvolts to 0.5 volts is required. No Receiver Coupling Kit was supplied with this receiver, and no cathode follower is necessary.

Modification of the associated receiver is greatly simplified by the higher input impedance of the CV-71/URR. In the case of the SX-101 receiver, one end of a 25 mmf mica capacitor is soldered to pin 2 or pin 9 on V_7 and the other end to a tie point. A short piece of stiff wire is then run to pin 6 on the accessory socket. Drake 2A and 2B receivers are modified by connecting one lead of a 100 mmf mica capacitor to the plate of the 6BF6 a.v.c. amplifier V_6 and the other end is connected to either one of the two GND terminals or to the ANT terminal (if a coax fitting is installed). Of course, the terminal selected is first freed of its old connection.

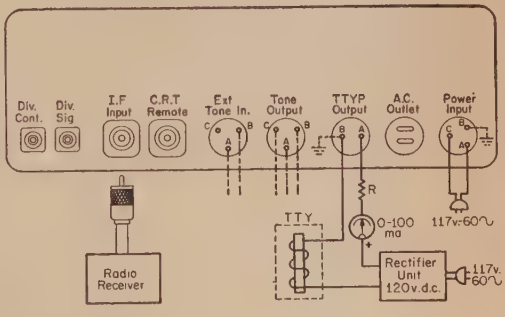


Fig. 3—Connections to CV-57/URR or CV-71/URR for RTTY

Connections

Figure 3 shows the connections made to the rear of either the CV-57/URR or the CV-71/URR. It is assumed that the necessary modifications have been made to the radio re-

K9YHB, Chicago, Illinois. a station operated by the Lawndale Chicago Boys' Club. Through the efforts of Ray Morrison. W9GRW, a Model 19 was recently installed. Dan Rusin, K9VDG, is the spear-head in the RTTY work. Harold R. Kopta, K9VKR, is the Director of the Lawndale Chicago Boys' Club.

The RTTY Forum at the Dayton Hamvention last May. The show of hands indicates the number of those in attendance owning machines.

ceiver to bring out the i.f. output via coaxial cable for connections to the I-F INPUT jack. Mating connectors are military AN units available from Cannon, Amphenol, and others. The following list identifies those needed for each circuit.

DIV. CONT.	UG-85/U
DIV. SIG.	UG-85/U
I-F INPUT	PL-259
CRT REMOTE	PL-259
EXT. TONE IN	AN3106-14S-12S
TONE OUTPUT	AN3106-14S-12P
TTYP OUTPUT	AN3106-14S-9S
POWER OUTPUT	AN3106-14S-7S

As previously mentioned, when the 50 kc CV-71/URR is used, the coaxial cable from the receiver i.f. should be of the low capacity type and the length should be as short as possible. When the low impedance CV-57/URR is used, the connecting lead can be RG-59/U coax of any convenient length.

The local loop to the TTY machine must be correctly polarized so that the *A* pin of the connector that goes to the TTYP OUTPUT socket is positive. Note that the *B* pin is grounded internally. Resistance *R* is adjusted to about 2000 ohms (use a 20 watt slider-type) to obtain 60 ma or to about 6000 ohms to obtain 20 ma; whichever your machine requires. The front panel jack TTY is in the hot side of the loop and is a convenient place to plug in a 0-100 ma meter.

The internal tone oscillator is not used in the normal amateur RTTY application therefore connectors to the tone sockets on the rear of the unit are not needed, nor would be the connectors to the diversity sockets. The CRT REMOTE connection would likewise not be needed, although if you have a 'scope you can plug it in here to get a larger "picture" for use as a tuning indicator.

Before beginning operation it is desirable to line up the Input Unit of the converter. This is done by feeding an unshifted test signal to the receiver, centering it in the bandpass of the receiver, which should be set at about 1000 to 1500 cycles. Connect an r.f. a.c. v.t.v.m. to the DIV. CONT. jack on the rear as an indicator (40 kc, 10 volt range) and adjust the cores of the oscillator and of the input transformers for maximum response on the v.t.v.m. These are, respectively, T-101, T-102, and T-103 in the CV-57/URR; and, T-201, T-202, and T-203 in the CV-71/URR. The panel TUNING control should be in the center, by the way.

Remove the test equipment and tune in an f.s.k. signal. Adjust the VERT. GAIN to give you two lines on the 'scope a convenient distance apart. Center the signal first in the bandpass of the receiver then use the TUNING control to center the lines on the 'scope. Now, with the TUNE-OPERATE switch in the OPERATE position, push the CAL. IN button and adjust the THRESHOLD control to produce a pattern which matches the top and bottom lines engraved on the 'scope window. The connected machine should now start to print. It may be necessary to change the position of the NORM-REV switch, however. The SPEED switch should be in the LOW position for RTTY. If errors seem to be high, it may be necessary to adjust the % MARK control. (It is located just below the NORM-REV switch.) This is done as follows: Connect an audio voltmeter to the PHONES jack, set the SPEED switch to ADJ, TONE FREQ. to 1785 cycles, and the TONE LEVEL to maximum. Place the NORM-REV switch alternately in the NORM and REV positions and adjust the % MARK control to obtain equal indications on the meter in the two positions of the switch.

The AFC switch is normally left OFF for RTTY, otherwise a signal will tend to be moved to the center when the transmitting station rests on *mark*.

Additional Notes

Space does not permit reproducing the schematic diagrams with this RTTY COLUMN.

[*Continued on page 111*]

GOTHAM VERTICALS DELIVER THE CONTACTS

IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

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2405 Bowditch, Berkeley 4, California
January 31, 1959

GOTHAM
1805 Purdy Avenue
Miami Beach 39, Florida
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I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,
Thomas G. Gabbert, K6INI (Ex-TI2TG)

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For further information, check number 47, on page 110

YL

BY LOUISA B. SANDO, W5RZJ
4417 ELEVENTH ST., N.W.,
ALBUQUERQUE, N. M.

SOUTHWESTERN *Division Convention—Disneyland*—these were "magic" words come true for some 3,000 hams, and families, lucky enough to attend this top notch affair. From Walt Disney's "Fantasyland" to the superbly served convention banquet, and all the sessions, luncheons, breakfasts, exhibition, etc. in between, we've never attended a better one.

Over 120 YLs registered for the convention —the first time, to our knowledge, that YL registration has exceeded the 100 mark at any convention!

YL activities started off with an open forum Sat. morning with W6CEE as coordinator. On the panel were WA6EVU, pres. of the San Diego YL club; K6JPY, YLRL 6th D/C; W6DXI, editor of *YL Harmonics;* W6BDE, of BAYLARCs; WA6AOE, pres. of the Los Angeles YLRC, and your YL editor, W5RZJ. Following talks and a question/answer session (tape recorded by W6HWM and W6LGY), prizes were won by K6IGA and K7KDP.

Highlight of the convention for the YLs-MYLs was the Sat. luncheon and fashion show in Disneyland Hotel's Magnolia Room. Some 400 gals enjoyed the fine meal and "oh'ed" and "ah'ed" the stunning creations of Georgia Bullock. W6PJU, Mildred, vice-chairman for the convention, was MC of the luncheon. In the California theme, she had created orange flowers-fruit corsages for all attending, with matching miniature orange-tree table decorations. Prize drawing followed with lucky numbers drawn by 11-yr. old WV6WCP, Sharyl.

Mainly for the entertainment of the non-licensed MYLs, enjoyed equally by the licensed YLs, was the SWOOP initiation presented Sat. afternoon by W6DXI, Gladys; W6BDE, Esther (one of its originators), and W6MWU, Mary. SWOOP (Suffering Wives Of Operators Protectorate) antics brought forth many a laugh, group singing of especially written songs (accompanied on the organ by W6HWM), and prizes.

Sat. night was family night at Disneyland Park, a short distance from the hotel via Monorail. With three name bands, including hamdom's Tex Beneke, and all the delights of "Tomorrowland," "Frontierland," *etc.*, is was a FB night for all.

Highlights of the Sun. banquet were the address by ARRL's new president, Herbert Hoover, Jr., W6ZH, and the presentation of the Dr. Lee De Forest Award. Established by the 1962 Committee of the SW Div. Convention, the De Forest Award will be presented each year to the person in the SW Div. who makes the year's greatest contribution to amateur radio. The plaque was presented by Dr. De Forest's charming widow, Marie, to this year's winner, Merrill Swan, W6AEE, for his outstanding work in the field of RTTY. (Incidentally, Marie De Forest hopes a college scholarship will eventually be set up in her husband's name.)

In addition to those pictured in convention and L.A. club photos, YLs attending included: W6's BIS, YZV, TDL, DQD, NSR, YZU/7, WBH, QYL, QOG, PCO, VWL, MA, MOL, WNE, VWL, MWU, HEG, JZA, PTJ, YIB; K6's JPY, ERK, OHR, RYP, KUI, IGA, ZLA, JZA, VHO, KFD, SRL, JMW, KXP, GAD, OWQ, PRZ, OQF, JHA, ZEH, ISC, KUP, CAL, ELO, LPN, AYF, DPX, RYP, QKE, CTJ, RJY, TAL, HIT, JNN, SBP, TYJ.

WA6's KKQ, RXH, PBA, PQG, DAZ, EVU, SJH, QVK, RMG, QJO, BTA, FRZ, KLP, MFL, ISY, KKT, MAP, HYU, BYJ, KZZ; WV6's UZW, WAO, WHX; W1COL/6, K1-MJA, W5RZJ, K5TIQ, KØOBX; W7's LIZ, YNF.

Some of the YLs attending the YL Forum at the S.W. Division Convention. In the left photo, front row: W6CEE, W6BDE, WV6WFZ, WV6ZCM, WA6TQX, WA6DXZ, W6PJU. Rear: WA6LWE, WA6BJB, WA6PQI, W6DXI, W6JCA, K6BUS, W6WSV. In the photo right, front row: K6EXV, K7KDQ, K7KDP, WA6OKG, WA6OUB, WA6OAZ, W6AQD. Rear: K6EXQ, K9OOC/6, K6HGS, WA6RCS, K7NOA, K6OAO, K6PRN, WA6VUH.

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For further information, check number 21, on page 110

KL7BJD, Mary (seated) and W7LCS, Toddy, operating KL7SOA-K7USA at the Seattle World's Fair. Toddy got her ham ticket in '47 after taking a YMCA course when her OM was away during WW II. He is W7IYV, a maritime operator, and they have frequent QSOs while he is at sea. W7LCS is on 40 c.w. (30 w.p.m. CPC) and 2 meter f.m. mobile for CD drills. Mary, of Spenard, has long been a member of the Sourdough Net, co-sponsor of KL7SOA-K7USA with the Puget Sound Council of ARC.

Prize drawing following the YL-MYL luncheon. L. to r., W6PJU, Mildred, vice-chairman for the convention and MC of the luncheon; WV6WCP, Sharyl, youngest YL at the convention, who drew the lucky numbers; WV6RXU, Marilyn, "Queen" of the convention.

At the L.A. YLRC installation of officers luncheon out-going president WA6AOE, Maxine, presented her co-officers and chairmen with "thank you" diplomas for their work during 1961-62. L. to r., front: K6JCL, W6JCA, W6VDP, WA6AOE, K6OAI, WA6EAF. Back: W6QVK, W6PJU, K6BUS, W6QGX, K6ANG, K6KCI, WA6BJB, W6JZA, W6UHA. *(W6CEE photo).*

Following the convention your editor, and jr. ops, had the pleasure of spending two days at the QTH of WA6AOE-K6MQT-WA6IYM at South Pasadena. On Mon. several YLs met us for a tour of the Arboretum and a picnic lunch, and in the afternoon we shack-hopped at W6JZA, K6OWQ and K6VAP. On Tues. we took in the famous Farmers' Market in L.A. with WA6AOE and W6UHA. . . . Your editor has been attending conventions in California since 1948 (as W2OOH, W7OOH, WØSCF & W5RZJ), and each one has been better than the last. Truly the hospitality of these W6-K6 gals would be hard to beat! Our sincere thanks to them all—and to the OMs, too. Honestly, we felt we had been "Queen for a *Week*"!

L.A. YLRC

On June 9 the Los Angeles YLRC held its installation of officers luncheon with over 40 members and guests attending. Officers for the 1962-63 term are: Pres., K6OAI, Anita; V.P., W6VDP, Mary; treas., K6JCL, Genevieve; rec. secy., W6JCA, Betty; corres. secy., W6QYL, Martha. One of the first YL clubs to be formed (1946), it is also one of the most active and is the largest, current membership being 90 YLs.

KL7SOA-K7USA

On May 31st the 1,000th ham had stopped by KL7SOA-K7USA, the Seattle World's Fair station located under the Space Needle at the entrance to the Alaska State Exhibit in the National Bank of Commerce dome. The station has been staffed by volunteers from the Puget Sound Council of Amateur Radio Clubs and the Alaska Sourdough Net, with KL7BJD, Mary, serving as chief operator. To be fair to both Alaska and Washington, the call KL7SOA (State of Alaska) is used from 1000 to 1600 and K7USA from 1600 to 2200. The station has been on all bands, including 2 and 6 meters with equipment loaned by various manufacturers.

Our condolences to W7HHH, Bea Austin, whose OM Carl, W7GNJ, joined the Silent Keys on June 11. Incidentally, a very nice write-up about Bea appeared in the *Oregon Netter* for June.

For your operating calendar—dates of the 23rd YLRL Anniversary Party: C.W.: Oct. 24-25, 1962. Phone: Nov. 7-8, 1962. Rules in October *CQ*.

33, W5RZJ

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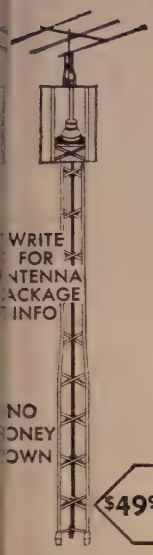

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- ★ No Traps — Mts. Anywhere
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Model WVB similar except for side mt. $12.95

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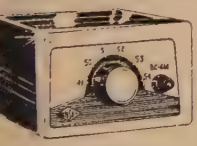

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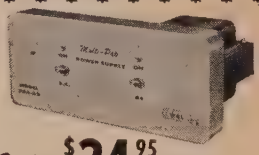

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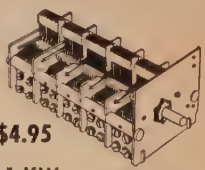

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CRX-3 Recvr.	94.95	3.24
FPM-200 Mob. Transcvr.	2650.00	95.51
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HA-2 2-Meter Transvtr.	349.50	12.44
HA-5 VFO	79.95	2.70
HA-6 6-Meter Transvtr.	349.50	12.44
HT-32B Xmtr	725.00	26.00
HT-33B Xmtr	995.00	35.75
HT-37 Xmtr	495.00	17.69
HT-40 Xmtr	109.95	3.79
HT-40K Xmtr	89.95	3.07
HT-41 KW Lin	$ 395.00	$14.08
P-26 Sup for above	99.50	3.41
R-47 SPKR.	12.95	.29
R-48 SPKR.	19.95	.54
S-108 Recvr.	139.95	4.87
S-118 Recvr.	99.95	3.42
S-119 SWL Recvr	49.95	1.62
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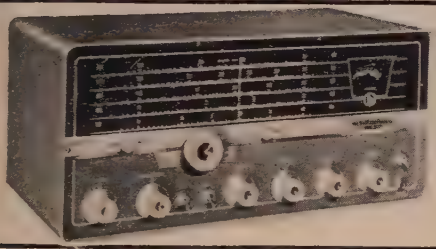
We have a truck load . . . and we have to move 'em. $5 down — top trades.

$495 HAM NET **$17.69** A MONTH (3 YEARS)



SX-111 — OVERSTOCKED!

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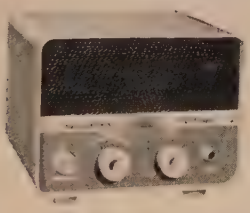
Why go off the air? Deal with Terry and you use your trade in until your new equipment arrives at your shack!



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S-40 Recvr.	59.00	SX-62A Recvr.	269.00
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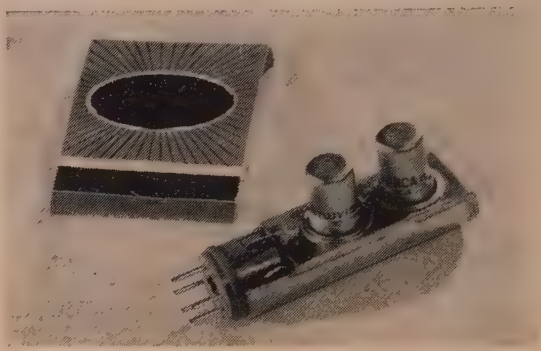

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You ask how can the Continental QSL Club, Inc., give automated distribution of such a mass of QSLs. Simple; same as ARRL does for DX cards and with ten separate local bureaus using volunteer help, but in this case it is highly organized providing that cards for you are assembled at one central place and with prompt delivery . . . a delivery as quick and as *positive* as you are in keeping a stamped, self-addressed envelope (No. 10 size) filed with the QSL Club after you join. As simple as that.

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Okey folks . . . that's one whale of a good deal at the price . . . and, stand by for announcement soon of the bulk QSL cards for which we've been promising you we will find a sponsor.

What's Cooking Department

After all the choicy morsels we threw in the pan above, you'd think the OLD MAN would be fresh out of high-light tid bits . . . far from it, our files (newspapers call it 'Morgue') are jammed with what would be hot scoops to others, and it is space alone that cramps our style.

We are continually amused by those who write that with all this highly interesting to all hamdom doings of USA-CA, CHC, HTH, FHC, QCWA, People-To-People Program, various Good Will Programs, and discussion of scores of hamdom's issues and problems, *why* do we not read about such more frequently in *QST*? They ask also, why they never read in *QST* about the hundreds of exciting awards programs by various U.S. clubs and organizations? Well, we suggest you not be too critical of *QST* because it is not a free press but a house organ devoted entirely to supporting programs of the ARRL. Like a free press needs its space to support hamdom's high-interest news, *QST*, as a house organ, by space necessity, needs all its effort in promoting primarily internal ARRL matters. It is as simple as that. By all means, subscribe to *QST* as a means of joining ARRL, and utilize *QST* to keep you informed on ARRL programs. *But* also, to keep yourself informed on what the other half are doing, subscribe to several free press rags like *CQ*, the *Monitor*, the *Florida Skip*, and others which devote space to news matters you'll never read in house organs like *QST*. And in this thinking, those of you who are so naive about the character of a free press as compared to house organs, should grow up with a better understanding that house organs and a free press are two entirely different brands of journals. The former, by design, uses all the propaganda and biased coverage at its disposal to 'sell' the institution that uses it. This is not bad; it is a fact of life as applied to *all* house organs of *all* special interest groups or organizations. They have no full intent of selling their policies, their programs, their wares with completely objective presentations, the same as a politician wouldn't get on his stump and praise the opposition. On the other hand, a free press serves no special interests groups; it serves the masses regardless of their differing views, and in so doing, by necessity, must be more objective in reporting *both* or several sides of controversial issues, and cannot omit by act of news selection, matter of high reader interest when such happened and is fact. So, let's mature a bit on our appraisal of our ham rags . . . let's support both our house organs and a free press, recognizing both have high usefulness in our free society but also recognizing that it is unhealthy not to have *both*.

On that bit of the OLD MAN's journalistic 'wisdom' we leave you with a thought . . . it matters not so much in mass opinions whether you agree or disagree so long as you are provoked to think for yourself and follow up such thoughts with action, be it *right or wrong*, because the Good Lord has endowed thinking men in a free society, a political destiny that *a majority is more often right* than wrong.

We'll hold 'court' on you swabs come next issue, 'til then, keep those ego-salve letters flowing this direction because without them, we'd not know which way the 'wind' was blowing.

Good Hunting . . . The OLD MAN, K6BX

Here's an operating achievement award sponsored by the QRP Amateur Radio Club for working five members who were running 100 watts or less at time of QSO. Endorsements for 10, 25, 50 etc. Apply with log data list and $1 or 7 IRC to K4WVX, Jim Perry, 2691 56th St., St. Petersburg, Florida. If you are a QRP advocate, you may join the club simply by sending QSL card to Secretary, W6CIS, Ken Hughes, 7233 Lindale Dr., Sacramento, Calif., or send along 50¢ to get on mailing list for monthly *Bulletin*. The QRP Club also sponsors an award for working all six continents when both parties were using 100 watts or less power. Application is same as for the above award.

Terry Stermar
W9D1A

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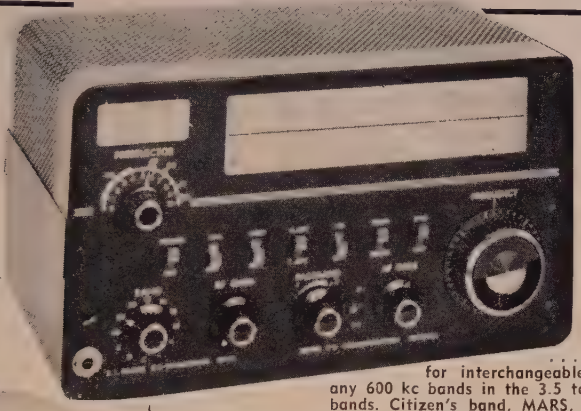

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4) Model 2-BQ Q-multiplier Speaker combo	39.95	3.53	1.76	1.26

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Crystal 24.5 mc, tunes (28.0-28.6 mc) lower 10 meter band and (20.4-21.0 mc)
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Crystal 10.0 mc, tunes (5.9-6.5 mc) 49 meter SW Best. and (13.5-14.1 mc)
Crystal 25.6 mc, tunes (29.1-29.7 mc) upper 10 meter band and (21.5-22.1 mc) 14 meter S W
Crystal 14.0 mc, tunes (9.9-10.5 mc) 10 MC WWV and (17.5-18.1 mc) 17 meter SW Best.
Crystal 11.5 mc, tunes (15.0-15.6 mc) 19 meter SW Best. and (7.4-8.0 mc) Mars
Crystal 15.6 mc, tunes (11.5-12.1 mc) 25 meter SW Best. and (19.1-19.7 mc)
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Important Announcement...

CQ Expands!

CQ PROUDLY announces a major expansion program of interest to all readers. Our publisher has just completed a transaction by which *CQ* acquires the *VHF Amateur* magazine, published by Bob Brown, K2ZSQ.

VHF Amateur will no longer be published as a separate entity, but its entire contents will be added to the pages of *CQ* each month at absolutely no extra cost to *CQ* readers. This means that *CQ* will run more pages of editorial material and will be able to offer even better coverage to all phases of amateur radio.

Joining *CQ's* staff as editor of *VHF Amateur* (which will be bound right in *CQ*) are Bob Brown, K2ZSQ, as well as Dave Heller, K3HNP, and Bob Heil, K9EID. As always Don Stoner, W6TNS will be in there stronger than ever. The *VHF Amateur* will include construction articles, propagation features, operating news, station improvement ideas, and a variety of other features of interest to all v.h.f.ers.

Present *VHF Amateur* subscribers will receive subscriptions to *CQ* toward filling out the remainder of their present subscriptions, while such subscribers who already receive both *CQ* and *VHF Amateur* will enjoy an extension of their *CQ* sub.

This take over will involve from three to four weeks of preparation, so the next issue of *VHF Amateur* will appear in the November, '62 issue of *CQ*. We're sure that our readers will find the expanded *CQ* bigger and better than ever.

Simplest Rig [*from page 41*]

Finally, in the fall of 1979, *CQ* was privileged to publish another article by that noble emancipator of the ham, Abraham Lincoln Smith. In it, he revealed the following startling discovery of an advanced communications technique which brought a complete revolution to ham radio: QSB and QRM were eliminated, and QSO's were 100% solid copy, if all stations on a channel frequency were directly connected by wires.

As simple as this concept seems to us now, at that time it was truly an indication of genius on Smiths' part. His name went down in the pages of electronics history right alongside those of McSnurd, Tonsils-Chatterly, and Loot.

Thus, amateur radio gear evolved into that presently used—and universally standard—piece of equipment with which most of us are familiar.

For those of you who may not be engaged in this fascinating hobby, this is a small black unit containing both the receiver and transmitter. The entire station occupies less than a square foot of desk space, and is gang-tuned, having but one dial on the front. It is absolutely QRM free, QSB is unheard of, and signals are always extremely strong. This equipment has become so widely used that hardly a hamshack is without one. Furthermore, the mode of transmission does not even require licensing.

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In closing, let me once more pay homage to Abraham Lincoln Smith, truly one of the great names in the saga of amateur radio. Without his advanced thinking, hams would still be building gadgets. ■

(Taken from a speech given May 29, 1987, by Herman Snodgrass, 39th vice president in charge of Public Relations, Bell Telephone Company.)

$5 Freq. Standard [*from page 32*]

lead can be directly connected to the antenna terminal or wrapped around the antenna lead wire for about 6 turns.

If the receiver has an accessory outlet, it will be convenient to mount a 7-pin miniature socket on a small minibox, and make a four wire cable to the accessory outlet. The series B+ dropping resistor may be mounted inside the minibox between pin 4 and the lead to the receiver B+. The other three leads are connected to filament power, ground, and the antenna as described above, and pictured in fig. 1. If room exists, the calibrator could be mounted inside the receiver.

THE CQ HAM MART

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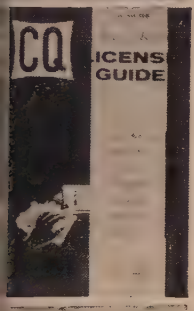

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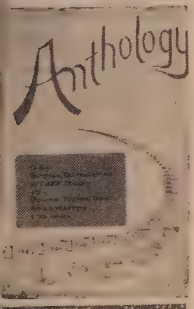

CQ ANTHOLOGY

Most amateurs do not have a good file of back issues of *CQ*. So we've looked back through the years *1945-52* and assembled all in one place the articles that have made a lasting stir. The issues containing most of these articles have long ago been sold out. The price is a mere *$2.00*.

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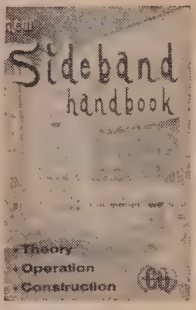

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Harmonics

It was thought that a clipping circuit would be necessary to enrich the oscillator's harmonic output, but the high output level and normal input stage nonlinearity produces usable harmonic markers up to, and probably far beyond 30 mc. Typical signal levels are given in Table I. The receiver used was an NC-190.

Accuracy

Laboratory instruments were available and precise measurement of accuracy and stability were made. Two oscillators were tested. Both were supplied set within 4 c.p.s. of 500 kc and were reset to within 0.5 c.p.s. They both held this frequency for several hours.

The calibrator has been in use for about 4 months and no noticeable drift or any other trouble has been noted. The oscillator unit is an exceptional bargain, since one cannot even buy the precision crystal for less than twice the price of the entire unit! ■

WØMLY/Africa [*from page 31*]

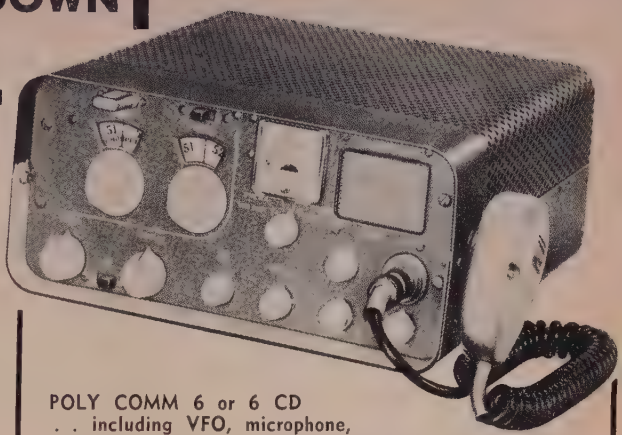
perturbed because I had come into town without checking in at Customs and Immigration. When I explained there was no one at the airport when I arrived, they really got upset. It seems that someone was supposed to have met me at the plane, but whoever it was must have been goofing off somewhere. After checking my passport and papers, we retired to the bar for a drink. Beer at 6:30 in the morning, ugggghhhh. But it was all worth it as we parted on the very best of terms.

I am now saying bonjour to everyone I meet and doing everything but kissing them on both cheeks. Perhaps when I meet a French girl, I will begin this custom also. I think they must hide all the girls when the American radio man comes into town.

The eating habits which I have established have paid off very well as I have not been sick for one day or even had a headache. The first few days in Gabon were very bad, but that was the effect of a shot which I had taken. An old saying which I had learned has really helped: "If you can't peel it, boil it." This includes everything, even water. I eat one meal per day in the restaurant. The rest of the time I eat canned hams, canned fruits and fresh fruits, mainly oranges, bananas and pineapple. The water you buy is in quart bottles which are shipped in from France, otherwise you drink beer, which is cheaper. Not being a beer drinker I do not relish the latter. At meals I get hot tea. Never eat any salad, that is absolutely out. Also, any item with milk or cream, such as custard and pastry. They probably use canned or powdered milk which is alright, but the heat over here soon spoils these things. Soup is alright since it is boiled. Once in a while I will eat a piece of meat in the hotel, but most of the time I have to send

[*Continued on page 98*]

LET'S GO DOWN TO 6 OR 2



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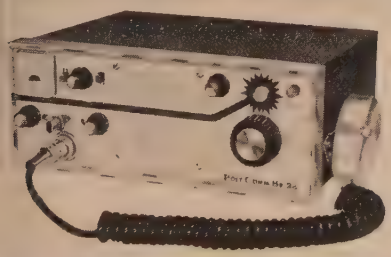

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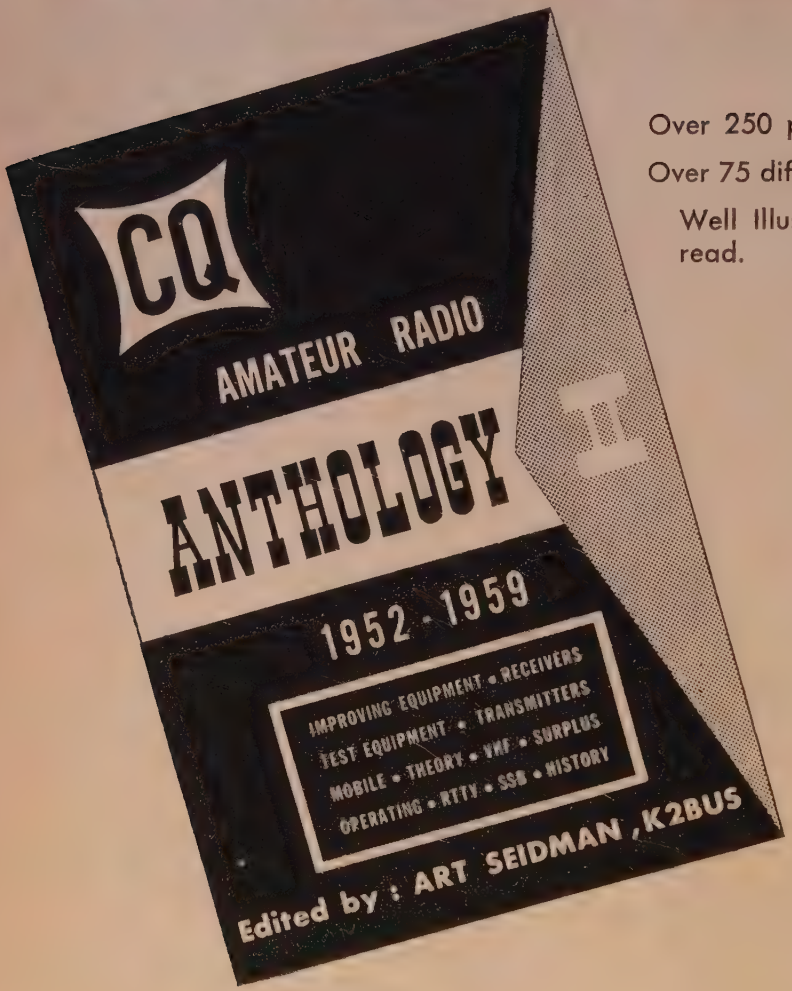

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CQ ANTHOLOGY

Down through the years CQ has had the honor of being there first with just about every major discovery in the amateur radio field. Unfortunately most amateurs do not have a good file of back issues of CQ to fall back on when they are interested in building up something or in improving their equipment. So we've looked back through the years 1952-1959 and assembled all in one place the articles that have made a lasting stir. The issues containing most of these articles have long ago been sold out and are unavailable. The price is only $3.00.

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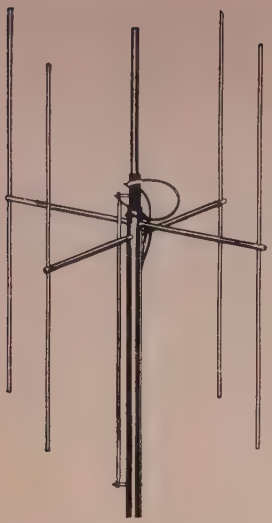

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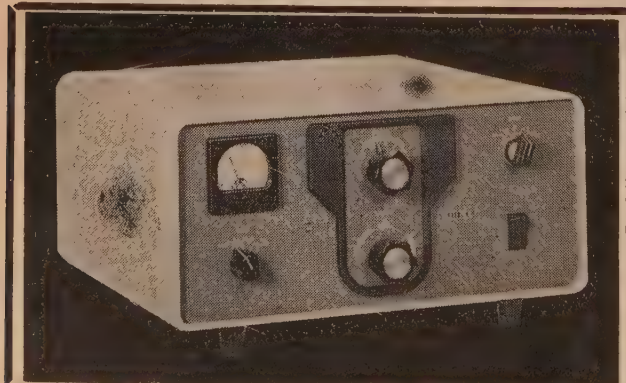

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W⌀MLY/Africa [*from page 92*]

it back to be cooked more. Never eat any meat that is the least bit pink in the middle. The hook worms are in all the meat over here. The heat will kill them, but you must make sure that the meat is cooked thoroughly to the center. Most of the time I slice the meat very thin and then send it back to be cooked more and it returns looking like crisp bacon. It destroys the flavor, but at least I am safe, I hope. There is an abundance of potatoes here so French fries are no problem. Another one of my staples is egg omelet. When I return to the states, I will not want to look at ham, or canned fruit for a long time. I have lost 18 pounds since I arrived in Africa, but I can well afford to lose it.

The TT8 operation came to a close after 1781 QSOs, the last entry on the log being W2ROM at 0552 GMT June 27th.

All the equipment is packed and will be transported to the airport by truck this time. I am all set to go to Douha in the Cameroons from where the stories will be resumed next month.

In closing this episode, I would like to add a few words concerning expenses. As I mentioned last month the Yasme Foundation is the sponsor of this DXpedition. Without their financial help I certainly would be in no position to make this trip. It would be appreciated if contributions could be included with the QSL cards to help defray operating expenses. I was very much surprised to hear that about 50% did not even send a self-addressed, stamped envelope for their TR8 cards. All QSLs for this expedition should go via GV4AA.

That about wraps it up for this month. We will have more for you next month. ■

PROP. [*from page 54*]

"Seems as though good old 160 is doing real well this summer and should put on a good show this coming winter 1962/63 season. So, b.c.n.u. on the band for sure."

From all available data, it looks as if propagation conditions on 160 meters may be better this coming winter than at any time since 1954.

CQ DX Contest Special

According to W1WY, *CQ's* Contest Editor, the following dates have been selected for the 1962 *CQ* W.W. DX Contest:

October 27-28, *CQ* World-Wide DX Phone Contest

November 24-25, *CQ* World-Wide DX C.W. Contest

Next month's column will contain special Propagation Charts for the DX Contest periods.

73, George, W3ASK

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For further information, check number 32, on page 110

Play

IDENTIFY

re's a little quiz we've added to t your memory and reading percepn. Each month we'll select sections different ads from a previous nth, and show just enough of the section to make it identifiable.

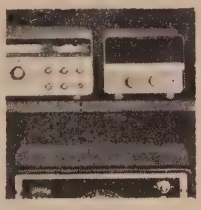
u can either pick the name of the nufacturer or distributor from mem-y, or you can look back through the evious issue and try to find the ad which the copy originally ran. Either ay, you score a full ten points for ch correctly identified item.

is month's selections are from the ly, 1962 issue. As an additional clue, 'll tell you that eight are from manacturers' ads, the other four from aler ads. Have fun.

ORING:

0-120 SUPERIOR
0- 90 EXCELLENT
0- 70 GOOD
0- 40 BETTER LUCK NEXT TIME
0- 20 OH, WELL!

(A)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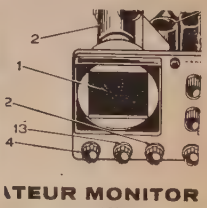
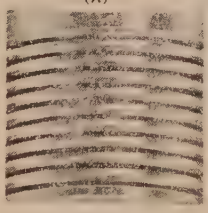


ATEUR MONITOR
(C)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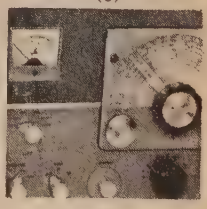
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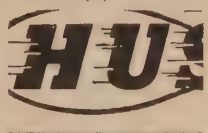
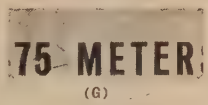
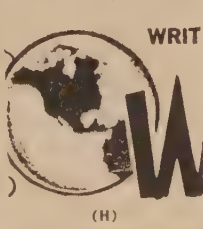
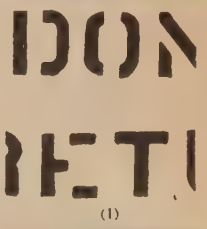




(G)



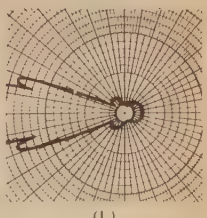
(H)



(I)

(J)

(K)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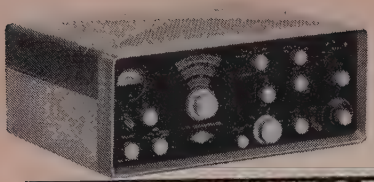
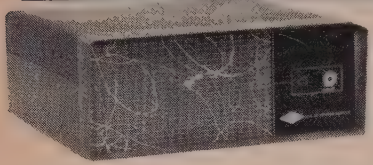


THE GONSET G-76
IS EQUALLY ADAPTABLE TO
MOBILE USE
OR FIXED STATION!

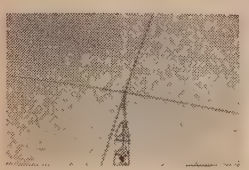


The G-76 operates on 6, 10, 15, 20, 40 and 80 meters. It is easily installed in vehicle, office or home. As a fixed station with AC power supply and speaker it is completely compatible with the 3357 VFO to provide amateurs with 6 meter band coverage.

For additional information contact your Gonset Distributor or write Dept. CQ-9

GONSET®
DIVISION OF YOUNG SPRING & WIRE CORPORATION
801 SOUTH MAIN STREET, BURBANK, CALIFORNIA

For further information, check number 33, on page 110



NEW

MODEL GP-10 $9.95
MODEL GP-11 $9.95

★ IDEAL FOR GROUND WAVE OR SKIP
★ GIVES FANTASTIC PERFORMANCE FROM FIXED TO MOBILE
★ PATTERN 360 VERTICAL POLARIZATION
★ ELECTRIC ARC WELDED SPIDER
★ ALL ELEMENTS ⅝" STEEL TUBING
★ MOUNTING FITS ON 1" TO 1½" PIPE
★ MODELS FOR 10 METER AMATEUR AND CITIZENS BAND

Send Only $3.00 and Pay Expressman Balance COD Plus Express Charges.

FUTURE PRODUCTS CO.
P.O. BOX #38, BLOOMINGTON, ILL.

For further information, check number 34, on page 110

Contest Calendar [*from page 52*]

Send your reports to the N.Z.A.R.T. Contest Committee, Box 489, Wellington, N.Z. They should be in the hands of the committee before January 19th, 1963.

Ed. Note: It's unfortunate that the c.w. week-end will be marred by the ARRL CD activity in the US. I still insist that a lot of this conflict caused by date duplication can be avoided if there is better coordination between organizations running these affairs.

YLRL Party

C.W.

Starts: 1700 GMT Wednesday, October 24th.
Ends: 2300 GMT Thursday, October 25th.

Phone

Starts: 1700 GMT Wednesday, November 7th.
Ends: 2300 GMT Thursday, November 8th.

The YLs have been running this one for a long time. Louisa Sando tells you all about it in her YL COLUMN next month.

CQ WW DX

See page 42 of this issue for complete announcement, with rule changes and new sample log forms. You will note that the new log sheets are limited to 40 contacts per page, making log keeping much easier. The summary sheet has been modernized and you will find them more informative. A lighter grade paper is used, allowing more sheets per ounce in mailing. We have a good supply on hand but don't wait until the week before the contest, get your request in at once. A large self addressed stamped envelope please.

DXpedition

If any of you fellows are planning a DXpedition this Fall, give strong consideration to holding it during our contest week-ends, we'll stir up the activity for you. And the revised point credits should make the Caribbean area doubly attractive.

RSGB 7 mc

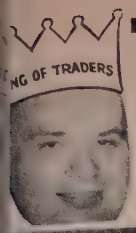
Phone

Starts: 0600 GMT Saturday, October 27th.
Ends: 2400 GMT Sunday, October 28th.

C.W.

Starts: 0600 GMT Saturday, November 3rd.
Ends: 2400 GMT Sunday, November 4th.

This is a new one organized by the R.S.G.B. It's the world working the British Isles on 40 meters.



Yes—I'll make you a positively Unbelievable Deal on HAMMARLUND if you're ready to TRADE this month!

$5 DOWN UP TO 3 YRS. TO PAY

This is the New Hammarlund HQ-110A Receiver

The famous HQ-110 was great . . . but this is a decided improvement. I've tried it and believe this one "has it." Terry Sterman W9DIA

HAM NET **$259** Only **$9.17** a month

The "King of Traders" is going all out to make a deal. Order NOW and get FREE Matching Hammarlund speaker with your new Hammarlund gear marked with (*) below. Note: with HQ-105TRS you get free OCT-X 8 channel CB selector!

FREE GIFT!

LOOK AT THESE LOW MONTHLY PAYMENTS AFTER $5 DOWN PAYMENT

		Price	1 Year	2 Years	3 Years
*HQ-100-AC	Receiver only in cabinet, with clock, 2 meters	$199.00	$17.78	$ 9.70	$ 7.00
*HQ-105TR	Receiver / Transmitter, in cabinet	219.50	19.66	10.72	7.74
*HQ-105TRC	Receiver / Transmitter, in cabinet, with clock (24 hr.)	229.45	20.57	11.22	8.10
*HQ-105TRS	Receiver / Transmitter, in cabinet with built - in speaker	224.50	20.12	10.97	7.92
*HQ-110-AC	Receiver only, in cabinet with clock	259.00	23.28	12.70	9.17
*HQ-145XC	Receiver only, in cabinet, with clock	279.00	25.11	13.70	9.89
*HQ-107C	Receiver only, in cabinet, with clock	369.00	33.36	18.20	13.14
*HQ-180C	Receiver only, in cabinet, with clock	439.00	39.78	21.70	15.67
HX-50	Transmitter in cabinet	399.50	36.16	19.72	14.24
HX-500	Transmitter in cabinet	695.00	63.25	34.50	24.91
MR-50X	Receiver, Monitor Single channel in 147-174 MC Range, supplied with one crystal to specified frequency within above range	199.50	17.82	9.72	7.02
HC-10	SSB/CW, AM/MCW Converter, in cabinet	149.00	13.20	7.20	5.20
HK-1B	Transistorized Electronic Keyer	39.95	3.53	1.76	1.26
PL-42900-G1	Noise Silencer (for HQ-170 and HQ-180 receivers only)	33.50	3.00	1.50	1.02

Terms above apply to three-year contract. Minimum order financed for 1 year, $60; 2 years, $120; 3 years, $180. Persons signing time-payment contracts must be 21 or over and employed. Serviceman's applications accepted.

WRITE FOR OUR LATEST LISTING. 10% DOWN—up to one year to pay on $60.00 order, two years on $120.00 order and three years on $180.00 order—$5.00 deposit to hold—Subject to Prior Sale.

HAMMARLUND RECONDITIONED EQUIPMENT

Q-110C	Receiver	$179.00
Q-120	Receiver	99.00
Q-129X	Receiver	119.00
Q-140X	Receiver	149.00
Q-145C	Receiver	219.00
Q-160	Receiver	229.00
Q-170C	Receiver	259.00
Q-180C	Receiver	319.00
X-500	Transmitter New Demo	499.00

STAY ON THE AIR

Why go off the air? Deal with Terry and you use your trade in until your new equipment arrives at your shack!

AMATEUR ELECTRONIC SUPPLY

Two Stores to Serve You

PLEASE SEND MAIL ORDERS TO MILWAUKEE STORE

MANAGER, STEVE, W9EAN

MILWAUKEE, WISCONSIN
3832 Lisbon Avenue
Phone: WEst 3-3262

MANAGER, "DOC", W9HJS

CHICAGO, ILLINOIS
6450 Milwaukee Avenue
Phone: ROdney 3-1030

Amateur Electronic Supply—Mail Order Dept. C-92
3832 W. Lisbon Ave., Milwaukee 8, Wisc.

Ship me .....
I enclose .....: I will pay the balance in

☐ 1 year ☐ 2 years ☐ 3 years

I want to buy ..... and want to trade .....
What's your deal?

Name .....

Address .....

City .....State.....

☐ Send Latest Free Reconditioned equipment bulletin.

For further information, check number 35, on page 110

BARRY Electronics Corp.

SEPTEMBER SPECIALS

Clegg "99"er—6 meter transceiver. **$159.50** Postpaid USA.

Drake 2B Receiver: SSB/CW/AM Ham Receiver. **$279.95.**

Drake 2-BQ: Q-Multiplier/Speaker for above 2B Receiver. **$39.95.**

RME6900 Receiver with 6901 Matching Speaker, $288.50 for both.

Autronic Keyer: All transistorized electronic keyer. **$69.50.** Postpaid.

Autronic Key for above: $16.95 Postpaid.

Johnson Viking Courier: 500 W. Linear Amplifier. Factory wired. Demonstrator. **$219.50.**

National NC-400. Counter demonstrator. AAA-1 condition. Not a scratch. **$595.00.**

Gonset CAA Communicator: 112 thru 132 Mcs. w/mike, case. 115 VAC & 12 VDC. **$175.00.**

Minn. Honeywell Model W612A. 12 V. Transistor PS. 510 VDC @ 300 Ma. w/tap @ 255 VDC. **$54.95** Postpaid.

RF Dummy Load: 52 or 72 Ohms. 1500 Watts. W/RF Ammeter. Specify 52 or 72 Ohms. **$49.00** fob, Ba.

6 KV/750 Ma. 1/2 Wave Rectifier: Ten 1N1120 mtd on terminal board. Each rated 600 PIV/750 Ma. Assembly **$4.50.** 1N1120's @ **36¢** each.

Westinghouse Silicon Top Hat: Westinghouse type 320-H. Equivalent to 1N1222. 400 PIV/1.6 Amps. ICAS or 1 Amp. CCS. **45¢** each.

Transistor Power Supply: 12 VDC/250 VDC @ 100 Ma. **$19.90.**

Clegg Zeus 2 and 6 Meter VHF Xmtr. Write for good deal.

Clegg Interceptor VHF Receiver. Write.

G.E. Plate Xfmr: Pri: 115 or 230 @ 60 CPS. Sec: 3525 VAC @ 2 KVA. **$19.95.**

Kilowatt Power Supply: Input: 220 @ 50/60 CPS. Output: 3000 VDC tested at 350 Ma. Relay rack panel 19" x 14". Tune position 1000 V. Modern design/silicon rectifiers. Line meter and 4 KV meter. 14" x 19" x 13". 150 lbs ship'g wt. **$95.00** fob, Ga.

MOSELY, HI-PAR AND NEW-TRONICS "Hustler" Antennas IN STOCK!!!

AMECO Xmtrs and Nuvistor Convertors in stock!

Drake/Hammarlund/RME/National/Receivers in stock! PL-55 Plug @ .12; 8,000 Mfd. @ 55 W.V. Capacitor $2.95.

Plate Xfmr/115/230/50/60 CPS. 3750-0-3750 tested @ 250 Ma. Oil-filled **$35.00.**

Thomas & Betts Deluxe wire welder, with welding gun. $29.50.

Philco Reg. Power Supply (Deluxe) 250 VDC @ 400 Ma. **$49.00.**

COME IN SATURDAYS from 10 AM to 2 PM. Free parking on Saturday. Mon. to Fri. 9 AM to 6 PM.

BARRY ELECTRONICS CORP. Dept. C-9
512 BROADWAY, NEW YORK 12, N. Y.
WALKER 5-7000 AREA CODE: 212

☐ Enclosed is money order or check and my order. Prices FOB, NYC. Shipments over 20 lbs. will be shipped colect for shipping charges. Less than 20 lbs. include sufficient postage. Any overage will be refunded.

☐ Send copy of "Green Sheet" Catalog.

☐ Send information on:.....

☐ I have available for trade-in the following .....

.....

Name ..... Title

Company .....

Address .....

City ..... State.....

For further information, check number 36, on page 110

Here is a rare case where date duplication might work to the mutual advantage of both parties. With our own WW DX Phone contests in full swing the Gs certainly will not lack outside activity, and it might stir up some new contacts for us in a normally inactive area.

The only problem, how are you going to keep two separate logs straight? And it will mean two different serial numbers each time you work a British Isle station.

Ed. Note

Since we have not heard from the LABRE Contest Committee it can be assumed that this event will not be held this year or the date has been changed or the committee just doesn't give a hoot.

Information received at press time from the VE/W Contest Committee only permits announcement of the dates. For any additional information you will have to dig through the September issue of "that other magazine."

Please note that W6IBD, all-band winner from Cal. in the CQ WW DX Contest was erroneously listed as W6IRD.

How about that G3COI chap, he's gone and done it again. One of these days Arnie, "Pow! Right in the kisser."

73 for now, Frank, W1WY

Space [*from page 60*]

age. Besides reviewing the results of NASA's four-year old space program, the book projects the reader into the future with an exciting discussion of the X-15 exploits, Project Dyna-Soar, and other space research problems that are challenging the genius of America's scientists, engineers and technicians.

Of tremendous interest to students is the second half of *Projects: Space,* which is devoted to fourteen different student reports on Space Age science projects, along with over 100 suggestions for new student projects in the field of space, ranging from computer programs to the development of rocket propulsion systems. If you are looking for ideas for a space science project for this semester, Judith Viorst's book is where to find them.

Projects: Space is indexed and well illustrated with photographs and drawings. It is published by the Washington Square Press, 630 Fifth Ave., New York City. Copies can be obtained from your local book dealer for 45¢ each.

OSCAR I Report

The long-awaited Project OSCAR Association's report on OSCAR I has been received at press time. Entitled "OSCAR I: A Summary of the World's First Radio Amateur Satellite," the report describes in detail the objectives and results of the OSCAR I program. Pertinent parts of the report will be discussed in next month's column.

73, George, W3ASK

sidebands, the tone should be approximately the same on upper and lower. This completes the adjustment of the "VHF Quacker."

Don't look down your nose at this little rig. It has been used on DX'peditions on the low frequency bands and really gets out without any additional power amplifiers.

Next month this column will feature a conversion to the Barry Electronics $15.00 beacon transmitter. This unit can be modified to convert the 14 mc. sideband signal of the "Quacker" to the two meter band.

Because of the large amount of material in this month's column, the letters will be held over 'til next time. 73, de Don, W6TNS

Answers to Transmission Line Quiz

(The quiz can be found on page 41)

1. The feed point impedance of the antenna. Choice A could possibly be correct only if a lossy line of many, many half-waves in length were used. Other than this possibility, there is nothing that can be done at the sending end of a transmission line that will affect the v.s.w.r. on the line. All tales of flattening a line by altering its length or by tuning the line at the sending end are pure fiction.

2. Increase. In the United States, v.s.w.r. always is expressed as a number, either unity or greater; therefore C cannot be a logical choice. A shift in frequency of 100 kc would affect the midpoint impedance, causing it to depart from its original resistive value as well as to acquire a reactive value. In all probability, the v.s.w.r. would show an appreciable increase.

3. Greater. The midpoint impedance of a half wave antenna in free space is approximately 72 ohms. At the ends, the impedance is very high, generally estimated at approximately 4000 ohms. Disregarding end effects, the same antenna operated at twice the frequency would be two half waves, with the high impedance point at the center. Thus the midpoint impedance, in this case, would be very high.

4. False. The base feed point impedance of a grounded antenna is very much less than a quarter wave in length, even though electrically lengthened by base or center loading, is very low indeed. It is variously estimated as being between 0.04 ohms and 4 ohms. In any case, it would present a bad mismatch to a 52 ohm feeder.

5. True. A pi-network with a reasonable degree of flexibility is capable of transforming a considerable magnitude of reactance as well as divergence of resistance from the nominal value. As long as a network (or any other configuration) can transform the line impedance (and note that "impedance" implies both resistive and reactive elements) into the proper resistive load required by the output stage, that stage can deliver its normal output to the transmission line. ■

FREE!

FROM BILL BRURING W9ZSO

64 PAGE AMATEUR CATALOG
NEWEST NAME BRAND GEAR

Communication Equipment Co.
518 STATE ST.
LA CROSSE, WISC.
PHONE 4-7373

Groth 'TURN COUNT DIAL
Registers Fractions to 99.9 Turns

FOR roller inductances, INDUCTUNERS, fine tuning gear reducers, vacuum and other multiturn variable condensers. One hole mounting. Handy logging space. Case: 2" x 4". Shaft: ¼" x 3". TC 2 has 2⅛" dial—1⅝" knob. TC 3 has 3" dial—2⅝" knob. Black bakelite.
TC 2 $5.50—TC 3 $5.75—Spinner Handle 75c extra
Add 12¢ for Parcel Post
R. W. GROTH MFG. CO.
10009 Franklin Ave. Franklin Pk., Illinois

LOOKING FOR A TOWER?
Write today for the all-new TRISTAO catalog. A completely new concept in tower design for all amateur applications. TRISTAO—an old name in tower design with a new style and a brand new line.
TRISTAO Towers, Inc.
242 South J St., Dept. CQ9, Tulare, California

TELETYPEWRITER EQUIPMENT • COLLINS
51J-3 and R-390A RECEIVERS Teletype: #14, 15, 19, 26, 28; Kleinschmidt: TT4A, TT76, TT98, etc. Telewriter Receiving Converter, etc. For general information & equipment list, write to TOM, W1AFN *ALLTRONICS-HOWARD CO.*, Box 19, Boston 1, Mass. RIchmond 2-0048.

10,000 Things Electronic to Enjoy
10,000 WAYS TO SAVE

Send For RADIO SHACK's 1963 Electronics Catalog
FREE For you and two friends.
Get everything you need in electronics in this new 284-page catalog —Hi-Fi equipment, radios, tape recorders, tapes, records, tubes, test equipment and thousands of others —all at money-saving prices and no money down credit terms. Satisfaction guaranteed or money back.
RADIO SHACK CORP. Boston 17, Mass.

MAIL COUPON TODAY
Without obligation send me your NEW catalog: FREE & POSTPAID
Your Name
Address 62J21
City Zone State
Fill in names of two interested friends.
Name of a friend
Address 62J21A
City Zone State
Name of a friend
Address 62J21B
City Zone State

CANADIANS

Complete stocks of nationally advertised products always available at SMALLEY'S — ham headquarters for Western Canada. Ten licensed hams on our staff to serve you.

- TRADE-INS ACCEPTED
- USED HAM EQUIPMENT
- SEND FOR SPECIAL FREE HAM BULLETIN

FLASH! ALL ORDERS SHIPPED ON DAY RECEIVED

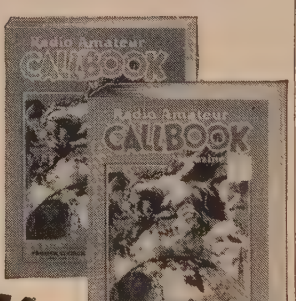
Pioneer ham suppliers since 1920. Specialists in HI-FI, TELEVISION and INDUSTRIAL ELECTRONIC EQUIPMENT.

Smalley's RADIO (1950) LTD.
1105 - 7th Ave., S.W., Calgary, Alta.

For further information, check number 37, on page 110

THREE IMPORTANT REASONS WHY YOU NEED THE

NEW, FALL 1962 CALLBOOK



- If your present CALLBOOK is only a year old, over 20% of the listings have been changed or added!
- Over 16,000 new amateurs added since the Summer, 1962 issue—biggest license increase in history!
- Completely revised essential data—latest international prefixes, Q signals, postal info., airline distances, time chart, etc.

Foreign Listings (All outside U.S.) $3.00

U.S. Listings (All K and W calls) $5.00

Now on sale at your amateur equipment dealer; if not conveniently located you may order by mail (please add 25¢ for mailing) from:

RADIO AMATEUR CALLBOOK, INC.
Dept. C, 4844 Fullerton Ave., Chicago 39, Ill.

P.S. Write for illustrated brochure on exclusive WORLD ATLAS . . . DX GUIDE . . . SPECIAL FULL COLOR MAPS.

Ham Shop

Rates for the HAM SHOP are 5¢ per word for advertising which, in our opinion is obviously of a non-commercial nature. A charge of 25¢ per word is made to all commercial advertisers or businesses organizations.

Your copy should be preferably typewritten, double spaced on one side of the page only.

We do not bill for advertising in the HAM SHOP. Full remittance *must* accompany all orders.

Closing date is the 15th of the 2nd month preceding date of publication.

We reserve the right to reject advertising which we feel is not of an amateur radio nature.

Because the advertisers and equipment contained in the HAM SHOP have not been investigated, the publishers of *CQ* cannot vouch for the merchandise listed therein.

ATTENTION Mobileers! Heavy duty Leece-Neville 6 100 amp system $50; 12 volt amp system $50; 12 volt amp system $60; 12 volt 100 amp system $100. Built silicon rectifier alternators 12 volt 60 amps $100; 12 100 amps $125. Guaranteed no ex-police car units. Her A. Zimmermann, Jr., K2PAT, 1907 Coney Island A Brooklyn 30, N. Y. Tel. DEwey 6-7388.

ONE THIN DIME brings 50 page eye-popping war sur electronics catalog. Fabulous bargains. Meshna, Lynn, M

TOROIDS: Uncased 88 mhy like new. Dollar each. $4.00 P.P. DePaul, 309 South Ashton, Millbrae, C

WANTED: Teletype printers, perforators, reperfora transmitter-distributors test equipment: Model #14, #19, #26, #28, etc. All types Collins receivers, 51J, R-390, 75A, etc. Cash, or trade for NEW amateur eq ment. Write Tom, W1AFN, Alltronics-Howard Co., Box Boston 1, Mass. (Richmond 2-0048).

WANTED: TEST EQP'T TS or AN/URM, UPM, A etc. TELETYPE TG-7,Models 15, 19, 26, 28, prin & reperforators: Revrs & xmtrs· BC 610E, 1; AN/G & higher, RT-66, -67, -70, -77, Collins 51J 17L3, -4, 1 R-388 -390. -391; ARN-14 and 30; APR-9, -10, ARC -33, -34, -55; APS-10, -31, -33, -42 etc. We pay fre Amber Industrial Corp., 75 Varick St., New York 13, N

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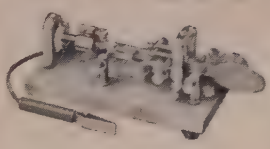

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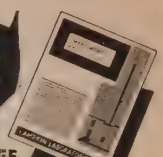

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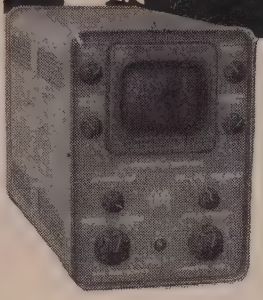

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FOR SALE—Heath Apache, $195, Mosley TA-32 Jr., $20. W5AYI, 11526 Ashcroft, Houston 35, Texas. Phone: PA 3-8395.

FOR SALE—Gonset Communicator III, A-1 shape—$195; Morrow 5BR-2 converter—$35; Paco R.F. Signal Generator & TV/FM marker generator, Model G30—$25; National Radio & TV Home Study Course—$15. John P. Nugent, c/o MARATHON, Division of American Can Co., Green Bay, Wis.

GOING HIGH POWER—need couple: 304TL, 833A, 750TL, 4-250-A, 4-1000A, etc., send best price. R. Levenson, 36 Dahill Rd., Brooklyn 18, N.Y.

SELL: Month old G76 with calibrator, Gonset 12 V DC supply, mike, Webster Bandspanner and bumpermount. All cables. Excellent condx $450. WA6EML, 1816 Linda Vista, West Covina, Calif.

SELL: CQ's 1946 to 1959 cheap. One or a dozen. What do you need? Rasmussen, Box 612, Redwood City, Calif.

WANTED: Heathkit, Cheyenne, Model MT-1 transmitter. State condition, age, and price. Ray Scheske, Empress Hotel, MooseJaw, Sask. Ca.

FOR SALE: 2 6293 Tubes, $11; 2 3B28 tubes, $10. Tubes are Brand New. K4NVI.

FOR SALE:—Barker and Williamson L-1000-A kilowatt grounded grid linear amplifier with integral power supply excellent condition—$285. Six meter transmitter in a little black box six watts includes tune up meter and PTT mike less power supply—$25; I have some plug in replacement silicon rectifiers for 6X4 and 12X4 excellent for Drake Receivers also high power silicon plug-ins for 866 and 866A. Reasonable. Write for prices. R. Cornwell, 2105 Micheltorena St., Los Angeles 39, Calif.

EXCELLENT HRO-60 for sale with coils, ABCD, $295. 75A-4, recently aligned by Collins expert, 3 kc. filter, $450. GSB-100 in perfect condition, $285. Johnson KW Matchbox, $65. KWM-1 with Blanker, DX adapter, 516E-1 12v. power supply, mobile mount with cable, $595. Will pack and ship collect receipt certified check or money order. Clark, WØUDZ, 2317 Vine, West Des Moines, Iowa.

FOR SALE: Gonset 6&2 VFO $24; Mosley VP20-3 3 element Vest Pocket Beam NEW $30, collection of diodes and transistors, 25 assorted diodes $1.00, 10 PNP Audio Transistors $1.00. Samkofsky, 201 Eastern Parkway, Brooklyn 38, N.Y.

SELL: Drake 2B. extal calib. a-mult & speaker — 1 Week old $270; Eldico — SSB-100F $400: RME-4303 CB Walkie-Talkies pair $80: Hallicrafter SX 101 MK3 $250. All like new and FOB—Lamb, 1219 Yardley Rd., Morrisville, Pa.

GENERAL coverage receiver wanted for RTTY, Collins 51 S-1. SP-600; AR88-LF, 51J-3-4, also a good Converter, typing Reperfs, need for panel lower front of #15 machine cover, also copy holder. Len Humphries, VE3XF, 41 Kildonan Dr., Scarborough, Ontario.

WANTED: Viking Johnson kilowatt. State Model and Price. George Boufill, 320 Ringwood Ave., Menlo Park, California.

MUST SELL. Immaculate HQ-170C; $258. Albert Johnson, K1IIK, Newport, N.H.

TRADE—one Knight R-100 Communications Receiver with S-meter and Crystal calibrator, like new. 6-months old for one BC-603, one BC-683 and one BC-453 receivers with dynamotors and in perfect condition. Will answer all letters. Richard LaMark, 1481 East Main Street, Rochester 9, N.Y.

WANTED: July 1947 issue of CQ. Will pay $2.00. Send to—Richard Koller. 7248 So. Bell, Chicago 36, Ill.

WANTED: Tubes, diodes, transistors, military, commercial lab-grade test equipment, components, PRC, GRC, equipment, aircraft equipment by Collins. Top Prices. Write details, Bob Sanett, W6REX, V & H Radio Electronics, 2053 Venice Blvd., Los Angeles 6, California.

FOR SALE: Complete instructions including 28 page booklet and 22" x 36" schematic for converting the ART/13 transmitter to AM and SSB. Satisfaction guaranteed. $2.50. Sam Appleton, 501 N. Maxwell St., Tulia, Texas.

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FOR SALE: Hallicrafters S-108 receiver. like new. $100. Larry Long, 1907 Nueces, Austin 5, Texas.

Hammarlund HQ 140X, speaker, $140. RME DB 23 $35; new Viking Challenger, factory wired $110. Glove 755 VFO $35, Transitron TR-2000 TR switch $8, Johnson Speedex bug $12. WØPRM, 202½ So. 10th, Independence, Kansas.

FOR SALE: Collins 75A-4 Serial #5721 latest model, with 3 kc and 6 kc mech. filters. Rack mounting hardware. Immaculate, under 100 hours use. $600 firm. Prefer local sale, will deliver within 20 miles. Cash or certified check. K2EEK, 75-15 177 St., Flushing 66, N.Y. Tel: Ja 3-5420 after 7 PM.

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National NC60	80	National NC98	135
National NC125	150	National NC188	120
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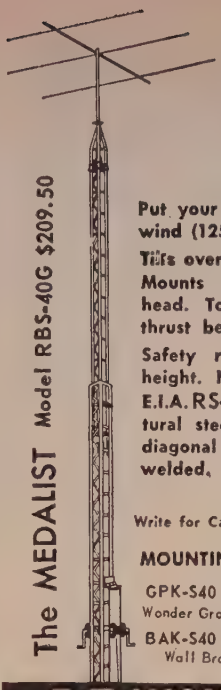

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NOVICE [*from page 75*]

Tommy Branton (15), Box 68, Dayton, Texas needs help. He knows the code.

John Rehak (14), 320 West Burnham, Battle Creek, Michigan needs local help with his transmitter construction. Look up your local radio club, John, they usually will offer to help.

William C. Caddell (39), 307 Beckham Street, Sulphur Springs, Texas is an amateur photographer and a motion-picture operator. He wants to be a ham, will you help?

Clarence Blalock (60) ex-W4IE, Box 461, Albermarle, North Carolina might need some local help as he is unable to get around. He hopes for that ticket soon.

James Chastoin (29), 907 Bennett Lane, Colorado Springs, Colorado needs help from a local in getting started.

Joe Zeller, 2214 Winona, Chicago 25, Illinois needs someone to explain ham radio to him and tell him how to get started. Read August *CQ*'s NOVICE COLUMN, Joe. Hunt up the nearest radio club also.

If you need help to get your ticket or get going, send all the information to Walter G. Burdine, W8ZCV, R.R. #3, Waynesville, Ohio and I will put out the helpful ham call for someone to help you. That helps in most cases.

Thanks to all for your letters, notes, pictures and nice notes, I need more pictures of your stations and projects. Until next month,

73, Walt

RTTY [*from page 78*]

The instruction book, which of course contains the schematics, carries the Navy Department number NAVSHIPS 91355. It might be obtained from one of the surplus publications dealers listed in Chapter 8 of the *New RTTY Handbook*.

The converters themselves, as well as an abbreviated copy of the instruction book and schematics, can be obtained from Spera Electronic Supply, 37-10 33rd Street, Long Island City 1, New York. Complete groups are available as well as the individual converters. Shipping weight of a complete group, by the way, is 200 pounds.

CATS Meeting

The Chicago Area Teleprinter Society will hold this year's meeting in connection with the National Electronics Conference program October 7, 1962 at the McCormack Exhibition Hall at 10:30 A.M.

Dinner Door Prize will be a Model 28KSR Teletype machine. Meeting door prizes will include Models 15 and 14 TD's, typing reperforators, combination FRXD units and polar relays. Also on display will be the new Teletype Model 32 machine.

Comments

We regret that the length of the above technical information has made it necessary to eliminate the usual activities section, "On the Bauds," from your RTTY COLUMN this month. We thought you would prefer to have *all* the dope in one issue of *CQ* rather than in several. Stay with us and read about what's going on in RTTY in *your* area next month.

73, Byron, W2JTP

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These extremely selective audio filters have six tuned circuits and can be used either to peak a signal of 1020 cycles or reject it. The filter is very simple to use. Just connect it in the headphone line, or at the input to your last audio stage . . . that's all there is to it.

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Filters normally sell for about $5 each, when you can find them. The FL-8 has a switch built in, and the FL-5 requires an external switch to change from peak to null to out. The FL-5 is ideal for building into gear, while the FL-8 is handier to use outboard. Just try one of these filters and see what a difference it makes!

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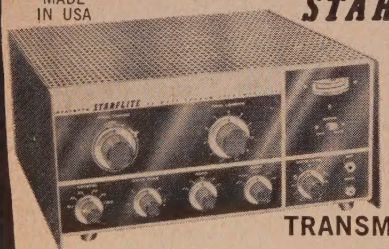

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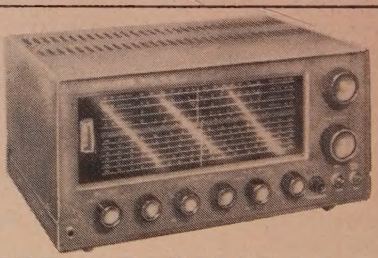

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*Speaking of guarantees — of course the new transceiver carries National's one-year guarantee!

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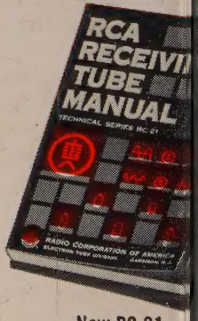

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